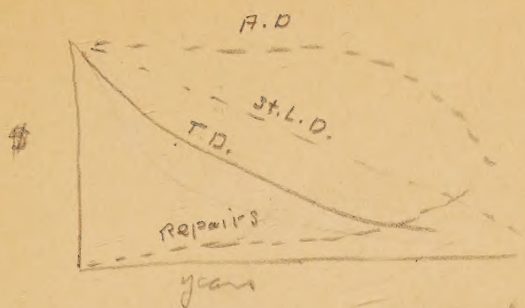




Depreciation graph

COST FINDING FOR ENGINEERS



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COST FINDING FOR ENGINEERS

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PREFACE

In presenting this volume to the engineering student the authors have set forth those elementary principles of accounting upon which accurate cost findings are based. Only such principles as are fundamental to sound factory cost accounting are emphasized. Thus, no time is wasted and no efforts dissipated in treating the phases of general accounting that bear but an indirect relation to the engineer and his problems.

The volume has been written with the definite and avowed purpose of providing a text-book for engineering students who are beginning the study of cost accounting.

The material embodied in this book, in the sequence in which it is here presented, has been offered for two years at the University of Pittsburgh in cost-finding classes for engineers. The material has been tried out and proven successful.

Instructors will find ample opportunity for supplementing the text by bringing in illustrative material from local industries. The methods of applying the principles in the text to specific situations make classroom discussions the best method of presentation. The authors do very little lecturing in conducting their cost classes. Study of the text, coupled with guided discussion, has been found adequate to ground the student in the factory accounting fundamentals.

A large number of executives of Pittsburgh industries, with their engineers and accountants, not only have given much of their time and advice in the preparation of this volume, but have permitted the use of forms taken from their own establishments. Without this cooperation the book would have been decidedly incomplete. To them we extend deep appreciation.

Mr. Robert D. Ayars, Professor of Accounting at the University of Pittsburgh, has read the entire manuscript and has given unstintingly of his time in helping to improve the presentation. For this service the authors owe Mr. Ayars an unpayable debt. Much credit likewise goes to Dr. Lawrence W. Bass, Executive Secretary of the Mellon Institute of Industrial Research at Pittsburgh, Pa., and to Mr. Emory A.

Austin, C.P.A., Auditor of the Hammermill Paper Company at Erie, Pa., who have read the entire manuscript and given valuable suggestions pertaining to it.

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PITTSBURGH, PA.

May, 1930.

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COST FINDING FOR ENGINEERS

INTRODUCTION

CHAPTER I

ENGINEERING AND COST ACCOUNTING

In the last two decades there has been a dominant shift in the type of service given by cost accounting to industry. During earlier days the outstanding purpose of cost accounting was to act as a guide to proper selling prices and the establishment of scientific bidding. By the use of costs, unprofitable lines of product were segregated from profitable ones. In fact, the industrial executives who had sufficient foresight to use scientific cost methods gained a great advantage over their competitors who operated by rule of thumb.

But fundamental changes, yes, almost revolutionary ones, are taking place in industry—changes which, in addition to the above worthy services, place new and very definite responsibilities upon factory accounting, and upon the engineer. With the uprootings of the World War, the industrial swing toward standardization, the development of high-speed tools, and with the swift handling of materials by mechanical conveyors, and with the rapid change from manual to automatic machine production have come stringent demands upon costs to meet these fundamental industrial changes. This new day in industry calls forth a definite analytical application of costs to the minute operations and units of production in every division of the plant.

With standardization, uniform practices, and high-speed production, the engineer in modern industry now finds that in addition to his well-established measurements of speed, design, cuts, stress of materials, etc., has come another and

most necessary form of measurement. *He must now be able to analyze every detailed part and parcel of production in terms of dollars and cents.* In short, he must know detailed "costs" of every performance if he is to measure successfully internal plant conditions.

Cost finding offers the necessary tool for measuring the productive performances of men and machines. This cost finding in turn is dependent upon two important factors.

First, the system of collecting and compiling cost data must be an integral part of the general accounting system of the enterprise. So close must this relationship be that at no time can the cost figures be out of control with the general accounting books.

Second, the plant engineers and managers must understand the more important cost processes so as to use intelligently the cost findings as they are reported from time to time. The engineers as a technical group are responsible for detail analyses both as to form and structure of product and it is they who are interested in having every minute part of the product turned out at the most economical cost figure.

The purpose of this text is to give the student of engineering a working knowledge of cost finding. This book and the one to follow, "Standard Costs and Budgets," are so arranged that both the basic principles and the practical application of those principles are fully covered.

At the very start of this text let it be emphasized that it is no child's play to gain a working grasp of cost finding. One cannot achieve a useable knowledge of costs by attending a few lectures or by reading a few magazine articles. If such were the case, then thousands of engineers would have a more intimate knowledge of cost finding than they now possess. Trained engineers know full well that in order to master a tool, trained skill is absolutely necessary and that it takes time to develop trained skill. Cost finding is no exception to that rule. To prepare adequately the engineering student for the proper handling of costs demands that *he be trained by actually doing* all the accounting activities that cover or are related to the manufacturing divisions of an enterprise. This text has been shaped upon that basic principle. The authors can offer neither short cuts nor quick methods for gaining mastery.

Both authors are, and for years have been, instructing engineering students in cost finding. Both authors also are employed in the industries of Pittsburgh where practical cost problems are appearing daily for analysis and solution. This constant experience with students and industry, coupled with a wholesome cooperation coming from many engineers, brings to the reader actual cost practice interpreted to his needs as a student.

Step by step the student is carried through the rudiments of elementary technique of accounting to a place where he is able to master the more difficult principles and applications of cost finding. Many of the problems as well as the illustrative material presented have been taken first hand from actual manufacturing industries.

This text is divided into four main divisions, each one of which forms a foundation for proper cost finding. Part I presents the basic principles of general accounting technique. As cost finding is an expansion of general accounting procedure, there is no better starting point for the beginning student than to acquire a knowledge of general accounting. Part II develops the fundamentals of asset valuations. Through the operation and maintenance of assets products are manufactured. Only by understanding that these assets are running constant expenses that must finally get into the cost of product can an adequate knowledge of cost finding be achieved. Part III describes in detail the use of control accounts. Accurate cost finding and the proper operation of a cost system are dependent upon the principle of accounting controls. Part IV paves the way for higher cost-finding procedure by describing the processes of unit product cost finding.

The second volume covers the more difficult principles of cost accounting and sets forth the methods and principles of standard costs and budgets. The final division of the volume deals with the reporting of cost findings based upon the principle that the cost reports must be shaped to the definite needs of those who are to use them.

Questions

1. When cost accounting first came into existence, what use was made of costs?
2. What are the newer demands made upon cost accounting?
3. Name the different factors responsible for bringing about the newer cost applications.

4. What must the engineer in modern industry be able to do in addition to measuring performance in terms of time and quality production?
5. What typifies the present production régime?
6. Why is it that retarded production and idle plants are considered to be costly?
7. What is meant by "measurement of performance" from a cost point of view?

PART I

ACCOUNTING TECHNIQUE

CHAPTER II

ACCOUNTS AND THEIR CLASSIFICATION

1. The Purpose of the Account.

Accounts are fiscal barometers of a business. Without accounts there would be no record of the progress or decline of a concern. The absence of accounts has brought about the death of many an establishment simply because there was no basis for measuring profits or losses. This is an era of high-powered competition. Such competition demands that business enterprises produce, distribute, and manage efficiently. Efficient management implies adequate control. The executive or engineer who cannot place his finger upon the details of a business does not have adequate control. Without accounts there can be no effective control, and the enterprise flounders helplessly or succumbs from the want of intelligent guidance. The account is the medium through which effective managerial control and financial status are reckoned.

2. The Use of the Account.

The detailed information, relative to business and industrial transactions, is recorded in the various accounts. All accounts record values relative to ownership by showing:

1. The various assets or property owned.
2. The existing liabilities or debts owed.
3. The capital investment or ownership interest.
4. The income earned.
5. The production, distribution, administration, and financial expenses.

It is the daily business transactions pertaining to producing, distributing, administering, and financing that are recorded

and summarized in the accounts. From these accounts are prepared periodic financial statements as to the condition of the enterprise. An analysis of the financial statements often will bring to light malconditions. As a result, remedies may be applied to relieve such conditions, and future policies may be determined. Thus the executive or the engineer may draw conclusions as to the needs of the business by reviewing the summary statements prepared from the accounts. Before proceeding further in regard to the purpose and function of the account, its nature will be disclosed in order that it may be identified at sight.

3. The Home of the Account.

Accounts are kept in a book called the "ledger." The purpose of the ledger is to house, in a classified manner, the transactions of the business. The ruling in the ledger is the ruling for the accounts. There is a wide variance in the style and ruling of the ledger. Regardless of its form, however, the ledger has but one function, that of housing the accounts. Form 1 gives the typical rulings of an account.

FORM 1.—LEDGER PAGE

Title of account										Page No.
Year Month	Day	Explanation	J o u r n a l	Amount	Year Month	Day	Explanation	J o u r n a l	Amount	
			F o l i o					F o l i o		

4. The Nature of the Account.

An account is a systematic record of both like and unlike transactions pertaining to the same person or thing. Why does an account contain like and unlike items? The reason is seen in the following Cash account.

FORM 2.—CASH ACCOUNT

Cash						1	
19—				19—			
Jan.	2	Capital in-		Jan.	5	Rent	\$ 100 00
		vestment of			6	Purchases	1,000 00
		H. J. Finley	\$40,000 00			Wages	150 00
	7	Sales	500 00	10	Purchases	500 00	
11	Sales		725 49				

The items on the left-hand side of the account represent receipts of cash from two different sources, namely, \$40,000 from the investment by the owner of the business, and various amounts from the sales of goods. On the right hand side of the account, disbursements for rent paid, wages paid, and purchases made are entirely different expense items. Other receipts and disbursements recorded in the Cash account may be wholly different from those already shown. Again in the course of a year's business, there will be many more receipts from sales and payments for like items of rent, wages, and purchases. What holds true for the Cash account is similarly true of all other accounts pertaining to the "like and unlike" transactions.

At the beginning of each account the date column should show the year. This may seem to be a trivial principle. Its importance is duly recognized when an audit of the books is made at some subsequent date. The name of the month is written on either side of the account but once, and then for the first transaction recorded in that particular month. If there be receipts from several sources or disbursements to various persons on any given date, the date of the month is usually shown but once.

The function of the journal folio column on both sides of the ledger account is disclosed in Chap. V, Sec. 3.

5. The Account Analyzed.

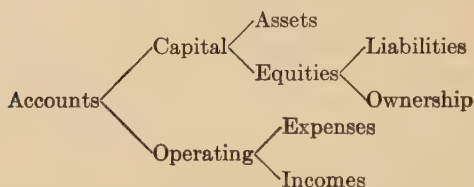
Attention has been called to the two sides of the account. The left-hand side is termed the "debit" side; the right-hand, the "credit" side. This is the first technical principle that must be driven home. Through custom and common

practise the left-hand side always represents debits and the right-hand side credits.

6. The Classification of Accounts.

Accounts are divided into two major groups, namely, "capital" and "operating" accounts. These major groups are subdivided into more refined divisions. The classification is probably best visualized in the following chart.

CHART 1.—THE CLASSIFICATION OF ACCOUNTS



Asset, liability, ownership, expense, and income accounts are subdivisions of the major groups. Each of the five divisions is in turn subclassified. A countless number of specifically named accounts are classified under these five divisions.

The importance of being thoroughly familiar with the classification of accounts cannot be too strongly emphasized. Its relationship to the financial statements is revealed in Secs. 15 and 17 of this chapter; to the trial balance in Secs. 9 and 10 of Chap. V.

7. The Asset Accounts.

Assets are property. Everything owned by a business is an asset. There is also a corollary to this statement. Anything owing to a business is an asset. Assets may be subclassified as current, fixed, and deferred.

Current assets represent cash or any other asset which will be converted into cash in a relatively short period of time, usually not longer than a year.

Fixed assets are those pieces of property necessarily owned by the business to facilitate in the transaction of its daily operations. They are not purchased with the intention to sell at a profit. They remain in the business as long as they render adequate service.

Deferred charges and prepaid expenses are classified as assets. They constitute the present value of the unused portions of certain expense items (see Chap. VII, Sec. 7). A prepaid insurance premium for a term of 3 years is a typical example of this type of asset. The unexpired portion (two-thirds) at the close of the first year constitutes a real definite value unused at that time, hence an asset.

8. Equity Accounts.

Equity means a right. In an accounting sense it means a right held by others to the assets of the enterprise. There are two distinct classes of equities, namely, ownership and liabilities.

9. Ownership Accounts.

The capital invested by the owner of a business constitutes his ownership and also his equity. Capital invested may consist of cash or other current or fixed assets. When capital is placed in a business by an individual, he has a right to expect its return in event he discontinues operation. This right possessed by the contributor of the capital is his equity in the assets. The most common types of ownership are those of an individual, a partnership, or a corporation.

The investment of the individual owner is termed his capital, and the account is shown in the ledger, for example, with the title "H. C. Thompson, Capital."

When two or more persons combine their capital for the purpose of carrying on a business with unlimited liability it is termed a partnership. The investment of each partner is shown in a separate ownership account.

A corporation is formed when three or more persons apply for and are granted a charter in accordance with the statutes of the state (Pennsylvania). The investments of the stockholders are shown in an account called Capital Stock.

10. Liability Accounts.

A liability is an obligation or a debt owed by a business. Credit, a form of debt, is one of the dominant factors in our present economic organization. Materials and supplies are purchased, almost universally, by means of credit, or as it is termed in business "on account." A merchant or a manu-

facturer buys materials, and according to the usual terms of the invoice has 30 days in which to make payment. The party making the sale is termed the "creditor." He possesses the right to expect payment for the goods which he has sold on account. Until this right is fulfilled the creditor possesses an equity in the assets of the business. The equity of the creditor, in the assets of a concern, always ranks ahead of the equity of the owner. Liabilities, like assets, may also be classified as current, fixed or long-term, and deferred.

Debts to be paid within a period of 1 year or less are usually termed current liabilities.

Long-term liabilities are obligations maturing at some date in the future exceeding 1 year.

Deferred credits to operation and prepaid income are considered to be liabilities. Such credits represent the present value of the unearned portion of certain income items (see Chap. VII, Sec. 8).

11. Expense Accounts.

Expense accounts comprise the larger of the two groups known as operating accounts. Expense, in accounting parlance, means the cost of carrying on the business; the cost of obtaining income. Expenditures, the benefit of which lasts only one accounting period, are considered expenses. All items involving the cost of production, distribution, administration, and management are considered as expenses.

12. Income Accounts.

The other group of operating accounts are known as income accounts. They record the amount of earnings from operations and other incidental sources. The sale of merchandise or finished goods is the principal source of income for any trading or manufacturing concern.

13. Personal and Impersonal Accounts.

Personal accounts are accounts with debtors, creditors, and with ownership. All personal accounts are also classified as capital accounts. A sale made to a customer on account establishes a debt owing to the business and is termed an account receivable.

These accounts are assets since they represent values owing to the business.

There are other supplementary account classifications not apparent as such in Chart 1. This classification is the one of personal and impersonal accounts. Personal accounts are those with debtors, creditors, and ownership.

When a sale is made to a customer, that party is said to be a debtor of the business, or more frequently termed an account receivable. These accounts are assets since they represent a value owing to the business.

FORM 3.—ACCOUNT WITH CUSTOMER

F. S. Slyder

19—					19—				
Feb.	7	Sales	\$ 416 77	Feb.	28	Cash	\$ 250 00		
	27	"	982 05		29	Balance	1,148 82		
			<u>\$1,398 82</u>				<u>\$1,398 82</u>		
Mar.	1	Balance	\$1,148 82	Mar.	3	Cash	\$166 77		
	16	Sales	458 85		29	"	982 05		
	30	"	176 99		31	Balance	983 74		
	31	"	347 90						
			<u>\$2,132 56</u>				<u>\$2,132 56</u>		
Apr.	1	Balance	\$ 983 74						

The purchase of materials or merchandise on account creates the existence of a creditor or an account payable. Accounts payable are liabilities representing amounts which are owed by the business.

FORM 4.—ACCOUNT WITH CREDITOR

Union Iron Company

19—				19—					
Feb.	13	Cash	\$1,972 81	Jan.	14	Purchases	\$1,972 81		
Mar.	2	"	2,637 48	Feb.	1	"	2,637 48		
					17	"	510 92		
					28	"	861 47		

Customers' and creditors' accounts may be with either individuals, partnerships, or corporations.

Ownership accounts showing the investment of the individual owner or of partners are also personal as well as capital accounts.

Contrasted with these personal accounts, which record values owed to or by persons, are all the other accounts recording values of things. Impersonal accounts may be either capital or operating accounts. Capital accounts, impersonal in nature, are accounts with Cash, Land, Buildings, Equipment, Mortgages, Bonds, etc. All operating accounts with expense and income are impersonal.

14. The Distinction between Capital and Operating Accounts.

The ability to differentiate between capital and operating accounts is a feat of prime importance, and may be considered as one of the three fundamental bases of introductory accounting. Knowing the classification of accounts is of great value, but the ability to distinguish an asset from an expense account, a liability from an income account is of even greater significance. The necessity for this line of demarcation lies in the fact that two groups of accounts are used to prepare entirely different statements. Capital accounts are used in the preparation of the balance sheet; operating accounts in the statement of income, profit and loss.

The other two bases which are of tremendous importance in introductory accounting are:

1. The principles and methods of debit and credit.
2. The structure of financial statements. These subjects are described in detail in Chaps. III and X, respectively.

15. The Relationships among Capital Accounts.

The three classes of capital accounts, assets, liabilities, and ownership with their subdivisions, have been described in detail. Now for a perspective of the three general classes of capital accounts as a group, and a description of their functions. These asset, liability, and ownership accounts record the real or relatively permanent values existing in the business. The assets are owned and used; the liabilities are owed

to creditors; and the ownership is the capital investment of the owner in the business.

The manner in which the owner and the creditors have an equity in the assets has been described. The relationship may be evolved as follows:

Assets = Rights to assets

or

Assets = Equity of $\left\{ \begin{array}{l} \text{Owner's investment} \\ \text{Creditor's interest} \end{array} \right.$

Thus the ownership equation is developed. It gives the basis for one of the important financial statements, namely the balance sheet (see Form 5).

FORM 5
H. C. THOMPSON
BALANCE SHEET
Dec. 31, 19—

Assets	Liabilities and Ownership
<i>Current:</i>	<i>Current Liabilities:</i>
Cash.....\$ 6,500	Accounts Payable..... \$8,600
Accounts Receivable.... 30,910	<i>Deferred Credits:</i>
Merchandise Inventory.. 30,000	Prepaid Rentals Received..... 50
	<i>Long-Term Liabilities:</i>
	Mortgage Payable.... 20,000
<i>Deferred Charges:</i>	<i>Ownership:</i>
Prepaid Insurance..... 250	H. C. Thompson, Capital..... 101,510
<i>Fixed:</i>	
Land.....\$15,000	
Building..... 40,000	
Store Equipment..... 5,000	
Delivery Equipment. 2,500	
62,500	
<u>\$130,160</u>	<u>\$130,160</u>

16. The Operating Accounts.

The function of operating accounts is to record profits and losses occurring within an accounting period. The period

usually is 1 month, but may cover a longer time sweep, such as a quarter, a half year or a year. Operating accounts, by their nature, represent changes taking place within a specified period, and when summarized at the close of the period indicate what changes have taken place in ownership. Operating accounts are sometimes called profit and loss accounts, expense and income accounts, or revenue accounts. In a going concern dozens of different expense items arise each month, such as wages, power, taxes, insurance, light, supplies, etc. With the occurrence of each item of expense, the effect is to decrease ownership. But imagine the inconvenience of changing the ownership figure in the balance sheet each time an expense was incurred! Separate accounts are maintained for each different type of expense. These expense accounts are then summarized periodically. Their combined effect upon ownership is then recorded.

Income accounts give the analysis of profit-making items coming to the business. The earning of income tends to increase ownership. Again it is not expedient to change the owner's Capital account with each increase in income. Various items of income are recorded in specific income accounts, such as sales of merchandise, interest earned, commissions received, rentals received, etc. Their aggregate effect on ownership is then periodically recorded.

17. The Relationships among Operating Accounts.

It is clear that expenses decrease ownership, while income tends to increase it. By applying this truism, the profit or loss from operations for any period may be ascertained. An excess of income over expense results in a net profit or net increase in ownership. On the other hand an excess of expense over income means a net loss or a net decrease in ownership.

The operating accounts form the basis for the preparation of the second important financial statement. It is known as the statement of income, profit and loss. Form 6 shows the outline of this statement.

FORM 6

H. C. THOMPSON

STATEMENT OF INCOME, PROFIT AND LOSS

July 1, 19— to Dec. 31, 19—

<i>Sales</i>	\$68,775
--------------------	----------

Cost of Sales:

Inventory, July 1, 19—.....	\$24,000
Purchases.....	60,000
Cost of Goods Available for Sale.....	\$84,000
Inventory, Dec. 31, 19—.....	30,000
<i>Cost of Goods Sold</i>	54,000
<i>Gross Profit on Sales</i>	\$14,775

Selling Expenses:

Salesmen's Salaries.....	\$2,500
Delivery Expense.....	1,500
Advertising.....	90
	4,090
	\$10,685

Administrative Expenses:

Insurance.....	\$ 175
Office Expense.....	150
Office Salaries.....	1,100
Taxes.....	260
	1,685
<i>Net Profit from Operations</i>	\$ 9,000

Other Income:

Rentals Earned.....	950
<i>Net Profit to Capital</i>	\$ 9,950

18. The Mixed Account.

There are certain accounts whose natures are such that they present characteristics of both capital and operating accounts. The Purchases account has the characteristics of an asset as well as an expense. Materials and goods are purchased by concerns for but one purpose. It is to manufacture commodities, or resell the same goods at a profit. The cost of the purchased goods sold is termed the "cost of sales." This cost is an expense. The value of the unsold purchases on hand at any time constitutes an asset. This inventory represents value tied up in goods and raw materials. It is termed the "raw material" or "mer-

chandise" inventory, and as such is a capital account (see Chap. III, p. 32 for an explanation of this type of a mixed account). The Prepaid Insurance account, described in Sec. 7 of this chapter, is another illustration of a mixed account.

The Rentals Received account illustrates a mixed account combining income and a liability under certain circumstances. If a business rented a portion of its building space and received 3 months rent of \$300 in advance on Dec. 1, 19—, and the fiscal period closed on Dec. 31, 19—, then, only \$100 rent has been earned in the period closed Dec. 31, 19—. There exists a liability to the next period for \$200 income belonging to that period.

19. Title of the Account.

The title of an account should be concise in every instance, and, at the same time, it should indicate clearly its nature. The account must be named so clearly that there will never be any doubt as to whether it is an asset, liability, ownership, expense, or income.

20. Arrangement of Accounts in the Ledger.

The ideal arrangement of the accounts in the ledger follows the outline in Chart 2. Orderly arrangement provides for all capital accounts in one section. Liability and ownership accounts should follow the assets. This arrangement is of convenience when the balance sheet is prepared.

All operating accounts should be grouped together under expense and income sections. They are convenient, then, for the preparation of the statement of income, profit and loss.

The number of accounts in a ledger depends upon the particular business. Its size and nature determines the transactions taking place. These in turn govern the number of accounts needed.

21. Chart of Accounts.

Chart 2 contains a rather comprehensive list of accounts in common usage. It is by no means complete in that it mentions every account in use. Its importance lies in becoming acquainted with the names of various capital and operating

accounts, so that transactions may be recorded with greater ease, and financial statements may be prepared in better form.

CHART 2.—CHART OF ACCOUNTS

I. CAPITAL ACCOUNTS

A. Assets

1. Current

Cash

Petty Cash

Notes Receivable

Accounts Receivable

*Reserve for Uncollectible Accounts

Cash Advances

Inventories	{	Trading Concern—	Merchandise Inventory
		Manufacturing Concern	Raw Material Inventory
			Goods in Process Inventory
			Finished Goods Inventory

Accruals Receivable:

Interest on Notes Receivable

Commissions Earned

Rentals Earned

2. Deferred Charges to Operation

Prepaid Insurance

Prepaid Advertising

Prepaid Discount

Fuel Inventory

Office Supplies Inventory

3. Fixed

Tangible

Land

Coal, Timber, Oil, or Mineral Deposits

*Reserve for Depletion

Buildings

*Reserve for Depreciation on Buildings

Machinery

*Reserve for Depreciation on Machinery

Tools

Patterns

*Reserve for Depreciation on Patterns

Delivery Equipment

*Reserve for Depreciation on Delivery Equipment

Office Equipment

*Reserve for Depreciation on Office Equipment

Store Furniture and Fixtures

*Reserve for Depreciation on Store Furniture and Fixtures

* Signifies the account is a valuation reserve used in ascertaining the present value of the asset to which it applies. In the ledger these valuation accounts have credit balances.

Intangible

Leasehold
 Patents
 Trade Marks
 Trade Formulas
 Copyrights
 Franchises
 Goodwill

B. Liabilities*1. Current*

Notes Payable
 Trade Acceptances Payable
 Accounts Payable
 Dividends Payable
 Deposits, Company Employees
 Accruals Payable
 Wages Unpaid
 Taxes Unpaid
 Interest Unpaid on Notes or Mortgages or Bonds Payable

2. Deferred Income to Operation

Prepaid Rentals Received

3. Long Term

Mortgages Payable
 Bonds Payable

C. Ownership*1. Sole Ownership*

Owner's Capital
 Owner's Personal Account

2. Partnership

Partners' Capitals
 Partners' Personal Accounts

3. Corporation

Common Capital Stock (par or no-par value)
 Preferred Capital Stock (par or no-par value)

Surplus	{	Earned	{	Reserve for Improvements
		Appropriated		Reserve for Contingencies
		Capital		Reserve for Sinking Fund
		Donated		

II. OPERATING ACCOUNTS*A. Income**1. Principal*

Sales
 Sales Returns and Allowances (a decrease of income and has a debit balance in the ledger)

2. Incidental

- Rentals Received
- Commissions Earned
- Interest Earned on Notes Receivable or Bonds Owned
- Dividends on Stocks owned
- Profit from Sale of Fixed Assets
- Miscellaneous Income
- Purchase Discount

*B. Expense**1. Manufacturing*

- Freight and Cartage (on purchases of raw materials)
- Purchases of Raw Material
- Direct Factory Labor
- Indirect Factory Labor
- Royalties (based on units produced)
- Fuel
- Water
- Power
- Insurance on Buildings
- Insurance on Machinery
- Insurance on Patterns
- Shop Supplies and Expense
- Repairs to Buildings
- Repairs to Tools
- Repairs to Machinery
- Taxes on Land and Buildings
- Taxes on Equipment
- Rent
- Depletion
- Depreciation on Building
- Depreciation on Machinery
- Depreciation on Tools
- Depreciation on Patterns
- Depreciation on Patents
- Depreciation on Leasehold
- Depreciation on Delivery Equipment

2. Selling or Distribution

- Purchases of Merchandise or Finished Goods
 - Purchase Returns and Allowances (a decrease in expense and has a credit balance in the ledger)
 - Freight and Cartage (on purchases of merchandise)
- Salesmen's Salaries and Commissions
- Salesmen's Expenses
- Sales Office Expense
- Delivery Expense (repairs, wages, insurance, license for delivery purposes)
- Freight Out (on goods sold and shipped)
- Warehouse Expense

- Insurance on Merchandise
- Insurance on Sales Equipment
- Advertising
- Depreciation on Delivery Equipment
- Depreciation on Store Equipment
- 3. *General Administrative*
 - Officers' Salaries
 - Office Clerks' Salaries
 - Telephone and Telegraph
 - Postage
 - Legal and Professional Expense
 - Subscriptions and Dues
 - Insurance on Office Equipment
 - Depreciation on Office Equipment
 - Cleaning
 - Stationery and Office Supplies
 - Taxes
 - Heat (for offices)
 - Light and Power (for offices)
 - Rent (for offices)
- 4. *Incidental*
 - Interest on Notes Payable
 - Interest on Bonds Payable
 - Interest on Mortgage Payable
 - Loss on Sale of Fixed Assets
 - Cash Short and Over
 - Sales Discount
 - Uncollectible and Doubtful Accounts

Questions

1. Define an account.
2. State the function of an account.
3. In what book is the account to be found?
4. Name five different general types of information recorded in accounts.
5. Describe the form of an account.
6. What are the two major groups of accounts in the account classification?
7. Name the subdivisions of accounts under the two major groups.
8. What is meant by "assets"?
9. Differentiate between current and fixed assets.
10. Define an equity. Equities are divided into what groups?
11. Describe what is meant by "ownership."
12. What are the different types of business organizations in which ownership is reflected?
13. What is a liability? Why is it classed as an equity?
14. What distinguishes a current liability from a long-term liability?
15. What information is recorded in expense accounts?

16. Income accounts record what information?

17. What is the distinction between a personal and an impersonal account?

18. State what is meant by selling or buying "on account."

19. An account receivable is classified under what account group? An account payable?

20. What is the importance of the distinction between capital and operating accounts?

21. What is the function of capital accounts?

22. What is meant by the "ownership equation"? Discuss its significance.

23. The ownership equation is present in what financial statement?

24. What is the function of operating accounts?

25. Expense and income have what effect upon ownership?

26. How is profit or loss from operation of a business determined?

27. In what financial statement is shown the profit or loss for any given period?

28. What is meant by a "mixed" account?

29. What factors must be taken into consideration before giving an account its title?

CHAPTER III

PRINCIPLES OF DEBIT AND CREDIT

1. The Transaction.

The business transaction was mentioned several times in relation to the account in Chap. II. In that chapter, the emphasis was on the account. The transaction now becomes the chief factor in developing the debit and credit principles. A business transaction is an exchange of values.

A few examples of transactions will illustrate the definition. When wages are paid, the management of the concern exchanges cash for services. When materials are purchased on account, the buyer exchanges his promise to pay for the merchandise. A cash investment of a concern just beginning business represents an exchange of cash for the owner's right or equity in the asset, Cash. Each transaction may be analyzed as to what is given or received by the business. Every transaction when analyzed represents either an increase or a decrease of some capital or operating account.

Each transaction must be analyzed as above, before it can be recorded in the proper ledger accounts. The amount involved in the transaction is recorded as a debit and a credit in some of the asset, liability, ownership, income, or expense accounts. Certain principles determine which accounts are to be debited and which are to be credited. An excursion now will be taken into the domain of these fundamental accounting principles. *The principles and methods of debit and credit comprise the second important basis of introductory accounting.* (See Principle No. 1, p. 12.)

2. Rules Underlying Debit and Credit Principles.

The historical background of accounting has developed four fundamental rules. These rules comprise the foundation upon which is built the whole structure of accounting. These fundamental rules are:

1. The left-hand side of the account is termed the debit side; the right-hand side the credit.
2. Every transaction contains elements of debit and credit.
3. In any business transaction the sum of the debits is equal to the sum of the credits.
4. The sum of the debit balances in all accounts is always equal to the total of the credit balances in all accounts.

3. Evolution of the Principle of Debit and Credit.

Remember that every transaction must be broken down into its constituent parts to find whether it affects operating or capital accounts. When a business transaction takes place, which accounts shall be debited and which credited? This is the question that confronts every beginner in accounting. Certain transactions will be stated and analyzed in order to develop these principles of debit and credit.

Transaction 1

H. J. Finley decided to embark in the business of trading in mechanical drafting supplies and instruments. On Jan. 6, he deposited in the Oldtown Savings and Trust Company \$10,000 in cash to the credit of the bank account of Finley's business.

Analysis.—The cash in the business was increased from zero to \$10,000. Likewise, Finley's equity in the assets of the business was increased from nothing to \$10,000. The equity is the right to the cash which is invested. This transaction affects two capital accounts, as follows:

Increase in assets (Cash).

Increase in ownership (H. J. Finley, Capital).

The relationship now existing in the business may be seen in what is termed the "ownership equation:"

Assets = Rights to assets

or

Assets = Ownership

This equation is the skeleton outline of the balance sheet. It would appear as follows:

Assets		=	Ownership	
Cash.....	\$10,000		H. J. Finley, Capital....	\$10,000

It would be necessary to prepare a new balance sheet with the occurrence of every transaction in order to reflect the ownership interest. The volume of daily transactions precludes this practise in actual business. Hence, accounts are used to record the increases and decreases in assets, liabilities, ownership, incomes, and expenses. The accounts recording this transaction in the ledger are:

(Debit)		Cash				(Credit)	
19— Jan.	6	H. J. Finley Capital In- vestment	\$10,000	00			

(Debit)		H. J. Finley, Capital				(Credit)	
					19— Jan.	6	Cash In- vestment \$10,000 00

A question naturally arises after studying the above two accounts. Why does the Cash account have a debit balance, and Finley's Capital account a credit balance? Why could the accounts not have just the opposite balances? Or why not show both accounts with debit balances or both with credit balances? Obviously, the latter would not be correct. It would violate the rule of equality of debit and credit necessary for every transaction. Answering the second question, a credit to Cash and a debit to H. J. Finley, Capital, does not run counter to the rule of debit and credit equality, but it does violate a principle of custom. A precedent has been set in the United States, whereby assets are always shown on the left-hand side of the balance sheet. The amount of cash shown in the balance sheet is taken from the Cash account in the ledger. There is, then, uniformity and agreement in showing the amount of cash received and the balance on hand on the left-hand side of the account. Consequently, all increases in cash are shown as debits. Since cash is an asset it follows that the increase in any asset is similarly shown as a debit in the account. This is the base from which the line of reasoning is carried on for all other illustrative trans-

actions in this chapter. Since the debit has been determined, there must be a credit. From the analysis made of this transaction, the credit represents an increase in the Finley's Capital account.

General principles evolved:

Asset accounts are debited when an asset is increased.

Ownership accounts are credited when ownership is increased.

Transaction 2

Finley had placed a \$5,000 order with the Engineer's Supply Company for paper, drawing materials, and tools. On Jan. 10 the shipment was received. Finley purchased the goods on terms of "net 30 days."

Analysis.—Finley became obligated to the Engineer's Supply House for \$5,000 since the latter has sold on account, *i.e.*, extended 30 days credit. After the goods are delivered, they become Finley's property, but the Engineer's Supply Company has an equity in the assets of Finley's business until their invoice is paid in full. This creditor has a right to receive payment for the goods it sold on credit. This right or equity is termed a liability of Finley's business. The liability was increased from nothing before the goods were delivered to \$5,000 after their receipt.

When the stock-in-trade was received on Jan. 10, it may be considered, temporarily, as an asset. It represents property of Finley's business, a value owned. But the purpose of buying the stock of goods was to sell again at a profit. When sold, the cost represents an expense, or it is termed the cost of goods sold. This is an illustration of a mixed account. The purchase is considered as an increase in expense in recording the transaction in the ledger. This transaction shows a mixed account (treated as an operating account) and a capital account as follows:

Increase in expense (Purchases).

Increase in liability (Engineer's Supply Company).

The ownership equation is now expanded as a result of this transaction:

From (Assets = Rights to assets)

To (Assets = Equities $\left\{ \begin{array}{l} \text{Liabilities} \\ \text{Ownership} \end{array} \right.$)

This equation is reflected in the ledger where the accounts record the illustrative transactions mentioned. The particular accounts affected by this transaction are shown below:

(Debit)		Purchases				(Credit)	
19— Jan.	10	Engineer's Supply Co.	\$5,000	00			

(Debit)		Engineer's Supply Company				(Credit)	
					19— Jan.	10	Purchases \$5,000 00

General principles evolved:

Expense accounts (mixed accounts combining elements of asset and expense accounts) are debited when expense is increased.

Liability accounts are credited when a liability is increased.

Transaction 3

Finley sent a check on Jan. 25, for \$3,000 to the Engineer's Supply Company to apply on account. Payment of the balance was held up pending the return of some goods which Finley declared were of inferior quality.

Analysis.—Making a payment of \$3,000 decreases Finley's cash by that amount, hence a decrease in his assets. The payment to the Engineer's Supply Company decreases the amount owed to them by \$3,000. This transaction illustrates:

Decrease in an asset (Cash)

Decrease in a liability (Engineer's Supply Company).

The accounts in the ledger now appear as follows:

(Debit)		Cash				(Credit)	
19— Jan.	6	Finley In- vestment	\$10,000	00	19— Jan.	25	Engineer's Supply Co. \$ 3,000 00

(Debit)			H. J. Finley, Capital			(Credit)		
					19— Jan. 6	Cash	\$10,000	00

(Debit)			Engineer's Supply Company			(Credit)		
19— Jan. 25	Cash	\$ 3,000	00	19— Jan. 10	Purchases	\$ 5,000	00	

(Debit)			Purchases			(Credit)		
19— Jan. 10	Engineer's Supply Co.	\$ 5,000	00					

All of the rules of debit and credit have been adhered to consistently. Each of the three transactions has a debit and credit; each debit amount equals the credit amount; and the sum of all the debit balances in the accounts is equal to the total of the credit balances in the accounts.

General principles evolved:

Asset accounts are credited when an asset is decreased.

Liability accounts are debited when a liability is decreased.

Transaction 4

Finley had to pay a hospital bill of \$500 on Jan. 27 for Mrs. Finley. Not having sufficient funds in his personal bank account, a check on the business account was written for the amount.

Analysis.—The asset, cash, was decreased by the amount of the payment. No value was received by the business in return for the \$500 cash expenditure. And the personal expense is not an expense of the business. Rather the \$500 represents a decrease of Finley's capital investment. Any withdrawal of cash or merchandise should be recorded in a supplementary ownership account termed "H. J. Finley, Personal." To provide for additional investments of cash or other assets, it is better to make use of the ownership

account labeled "H. J. Finley, Capital." The personal account is used to debit withdrawals. The value of the personal supplementary ownership account will be appreciated in connection with the preparation of statements in Chap. X. The transaction is analyzed as follows:

Decrease in an asset (Cash).

Decrease in ownership (H. J. Finley, Personal).

The ledger accounts now appear as follows:

(Debit)				Cash				(Credit)			
19— Jan.	6	Finley In- vestment				19— Jan.	25	Engineer's Supply Co.			
			\$10,000	00			27	Finley Personal	\$ 3,000	00	
										500	00

(Debit)				H. J. Finley, Capital				(Credit)			
						19— Jan.	6	Cash		\$10,000	00

(Debit)				H. J. Finley, Personal				(Credit)			
19— Jan.	27	Cash									
			500	00							

(Debit)				Engineer's Supply Company				(Credit)			
19— Jan.	25	Cash				19— Jan.	10	Purchases		\$ 5,000	00
			\$ 3,000	00							

(Debit)				Purchases				(Credit)			
19— Jan.	10	Engineer's Supply Co.									
			\$ 5,000	00							

General principle evolved:

Ownership accounts are debited when ownership is decreased.

General principle restated:

Asset accounts are credited when an asset is decreased.

Transaction 5

Finley received a credit memorandum from the Engineer's Supply Company for \$500, the value of the goods which he returned to them on Jan. 28.

Analysis.—In returning goods valued at \$500 to the Engineer's Supply Company, Finley's liability to them is decreased by that amount. Likewise, the net purchase is reduced to \$4,500 or \$500 less than the amount of the original invoice. This is equivalent to a decrease in expense. The analysis of the transaction is as follows:

Decrease in an expense (Purchases).

Decrease in a liability (Engineer's Supply Company).

A separate account is opened to record the value of the purchases returned. It is a supplementary account to the Purchases account. In this supplementary account are recorded all allowances on or return of goods purchased. In this manner the Purchases account will always show the amount of gross purchases. This figure is of importance for use in the statement of income, profit and loss.

The accounts in the ledger now appear as follows:

(Debit)				Cash		(Credit)			
19— Jan.	6	Finley In- vestment	\$10,000 00	19— Jan.	25	Engineer's Supply Co.	\$ 3,000 00		
					27	Finley, Personal	500 00		

(Debit)				H. J. Finley, Capital		(Credit)			
				19— Jan.	6	Cash	\$10,000 00		

(Debit)		H. J. Finley, Personal				(Credit)	
19— Jan. 27	Cash		\$500 00				

(Debit)		Engineer's Supply Company				(Credit)	
19— Jan. 25	Cash		\$3,000 00	19— Jan. 10	Purchases	\$5,000 00	
	28 Purchase Returns		500 00				

(Debit)		Purchases				(Credit)	
19— Jan. 10	Engineer's Supply Co.		\$5,000 00				

(Debit)		Purchase Returns and Allowances				(Credit)	
				19— Jan. 28	Engineer's Supply Co.	\$500 00	

General principle evolved:

Expense accounts are credited when expense is decreased.

General principle restated:

Liability accounts are debited when a liability is decreased.

Transaction 6

On Jan. 28, Finley made a \$600 sale to C. C. Winks on account, terms net 30 days. Finley marked the goods he purchased to sell uniformly at a profit of $66\frac{2}{3}$ per cent on the selling price, therefore the cost of the sale was \$200, and the gross profit was \$400.

Analysis.—This transaction is different from the preceding ones in that profit enters into consideration. Finley has received Winks' promise to pay in 30 days. The customer's

(Debit)		Purchases				(Credit)	
19— Jan.	10	Engineer's Supply Co.	\$5,000	00			
(Debit)		Purchase Returns and Allowances				(Credit)	
					19— Jan.	28	Engineer's Supply Co. \$500 00
(Debit)		C. C. Winks (Accounts Receivable)				(Credit)	
19— Jan.	28	Sales	\$600	00			
(Debit)		Sales				(Credit)	
					19— Jan.	28	C. C. Winks \$600 00

As sales are made the income is recorded in a Sales account. A final summary between the sales and the cost of sales is then made periodically—monthly, quarterly, semiannually, or annually. This is accomplished by setting up a statement of income, profit and loss. If such a statement were to be prepared at this time it would appear as follows:

<i>Sales</i>	\$600 00
<i>Cost of Sales:</i>	
Purchases.....	\$5,000 00
Less: Purchase Returns.....	500 00
Net Purchases.....	\$4,500 00
¹ Inventory, Jan. 29, 19—.....	4,300 00
Cost of Goods Sold.....	200 00
Gross Profit.....	\$400 00

¹ The inventory value of \$4,300 at Jan. 28 is reached in the following manner. The net cost of the purchases was \$4,500. The cost of the goods sold was \$200. The difference between the cost of the goods available for sale (\$4,500) and the cost of goods sold (\$200) equals the value of the goods remaining unsold (\$4,300).

Arriving at the value of the new inventory is not such a simple procedure in a going concern, although the general principle is the same. A perpetual inventory record may be maintained, or the Gross Profit Method may be employed to obtain the closing inventory value. Both of these methods are described in Chap. XIX. In the absence of either of these methods the closing inventory value may be ascertained by actual count. Counting, weighing, or measuring each unit is termed "taking a physical inventory." The unit count, in turn, is usually priced at cost or market, whichever is lower.

The question is often raised why the income account has a credit balance. Trading is carried on with the intent of making a profit. A gross profit results when income from sales exceeds the cost of the sales. This gross profit tends to increase ownership. One of the debit and credit principles evolved was that increases in ownership are credited. Since gross profit results from sales, and profits tend to increase ownership, sales and ownership have a credit balance in common.

General principle evolved:

Income accounts are credited when income is increased.

General principle restated:

Asset accounts are debited when an asset is increased.

Transaction 7

C. C. Winks requested a credit memorandum for \$25, covering paper damaged in shipment to him. Finley granted this allowance on Jan. 30.

Analysis.—An allowance of \$25 made to Winks decreases the amount he owes to Finley to \$575. The asset or the account receivable has been decreased by \$25. The allowance being made on the goods which were sold represents a decrease in income. The gross income of \$600 has been reduced to a net income of \$575 as a result of the \$25 allowance. The analysis is as follows:

Decrease in an asset (C. C. Winks).

Decrease in income (Sales Returns and Allowances).

A separate account is opened to provide for sales returned and allowances made on sales. For the purpose of ascer-

taining gross sales, the Sales account is used to record sales only. The Sales Returns and Allowances account is a supplementary account to the Sales account. The accounts necessary to record this transaction are:

(Debit)		C. C. Winks				(Credit)	
19— Jan. 28	Sales		\$600	00	19— Jan. 30	Sales Al- lowances	\$25 00

(Debit)		Sales Returns and Allowances				(Credit)	
19— Jan. 30	C. C. Winks		\$25	00			

(Debit)		Sales				(Credit)	
					19— Jan. 28	C. C. Winks	\$600 00

General principle evolved:

Income accounts are debited when income is decreased.

General principle restated:

Asset accounts are credited when an asset is decreased.

Transaction 8

Finley paid \$200 for salaries to his clerks for the month ended Jan. 31.

Analysis.—The asset, cash, has been decreased by \$200. The payment of salaries and wages constitutes a cost of operating the store, hence an expense has been increased. The effect on the accounts is as follows:

Increase in an expense (Store Salaries).

Decrease in an asset (Cash).

The accounts affected by this transaction are:

(Debit)			Store Salaries			(Credit)		
19—								
Jan.	31	Cash		\$200	00			

(Debit)			Cash			(Credit)		
				19—				
				Jan.	31	Store		
						Salaries		
							\$200	00

Invariably the question arises as to why expense accounts have debit balances. The answer is quite obvious, when it is remembered that expense accounts record changes in ownership temporarily. Every expense of the business incurred tends to decrease ownership, just as the increase in income tends to increase ownership. With the increase of each item of expense, the effect upon the owner's capital is that of decreasing it, which would mean a debit to the account. Debits to the owner's Capital account for all items of expense, however, would defeat the principle of adequate control through detailed records. Instead of debiting the owner's Capital account with each expense, specific expense accounts for each different class of expense are debited, and periodically they are summarized in the statement of income, profit and loss to show their combined effect upon the Capital account.

General principle evolved:

Expense accounts are debited when expense is increased.

General principle restated:

Asset accounts are credited when an asset is decreased.

4. The Debit and Credit Table.

A review of the eight preceding illustrative transactions definitely establishes the principle that every transaction represents either an increase or a decrease in a capital or an operating account. The principles developed in the preceding transactions may be seen in summary form (Chart 3).

CHART 3.—SUMMARY OF EIGHT PRECEDING ILLUSTRATIVE TRANSACTIONS

Debit	Credit
<i>Illustrative Transaction:</i>	<i>Illustrative Transaction:</i>
1 } Increase in Assets	3 }
6 }	4 } Decrease in Assets
	7 }
5 } Decrease in Liabilities	8 }
3 }	2 Increase in Liabilities
4 Decrease in Ownership	1 Increase in Ownership
7 Decrease in Income	6 Increase in Income
2 }	5 Decrease in Expense
8 } Increase in Expense	

A more general table may be prepared from the summary see (Chart 4).

CHART 4.—DEBIT AND CREDIT TABLE

Debit	Credit
Increase in Assets	Decrease in Assets
Decrease in Liabilities	Increase in Liabilities
Decrease in Ownership	Increase in Ownership
Decrease in Income	Increase in Income
Increase in Expense	Decrease in Expense

The necessity for understanding this table is of tremendous importance. Knowing it and how to make application of it is an essential prerequisite to the understanding of accounting. Use is made of the principles set forth in this table with the occurrence of every transaction. The importance attached to it carries through the entire accounting process from recording the transactions to the preparation of the financial statements. If proper application of the debit and credit principles are not made in recording the transactions, the statements, then, reflect the errors. And the purpose of an accounting system is defeated if the statements reflect inaccurate figures.

5. Restating the Purpose of the Account.

The preceding illustrative transactions have shown that the account records the changes relative to ownership. Each change in an operating account affects the owner's Capital

account. Since it is impractical to prepare a new balance sheet with the occurrence of each transaction, the ledger accounts summarize the changes. Periodically the balance sheet and the statement of income and profit and loss are prepared from a summary of the ledger accounts. In other words the owner's Capital account is adjusted at the close of each fiscal period.

Statements of the financial condition of the business of H. J. Finley are now prepared from the following ledger accounts which record the transactions for the month of January. (NOTE: The figures in parentheses refer to the preceding illustrative transactions.)

(Debit)		Cash				(Credit)	
(1)	19__ Jan. 6	Finley Invest- ment	\$10,000	00	19__ Jan. 25	Engineer's Sup- ply Co.	\$3,000 00 (3)
					27	Finley, Personal	500 00 (4)
					31	Store Salaries	200 00 (8)

(Debit)		H. J. Finley, Capital				(Credit)	
					19__ Jan. 6	Cash	\$10,000 00 (1)

(Debit)		H. J. Finley, Personal				(Credit)	
(4)	19__ Jan. 27	Cash	\$500	00			

(Debit)		Engineer's Supply Company				(Credit)	
(3)	19__ Jan. 25	Cash	\$3,000	00	19__ Jan. 10	Purchases	\$5,000 00 (2)
(5)		28 Purchase Re- turns	500	00			

(Debit)		Purchases				(Credit)	
(2)	19__ Jan. 10	Engineer's Sup- ply Company	\$5,000	00			

(Debit) Purchase Returns and Allowances (Credit)

					19— Jan. 28	Engineer's Sup- ply Company		\$500 00	(5)
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(Debit) C. C. Winks (Credit)

(6)	19— Jan. 28	Sales		\$600 00	19— Jan. 30	Sales Allow- ance		\$25 00	(7)
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(Debit) Sales (Credit)

					19— Jan. 28	C. C. Winks		\$600 00	(6)
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(Debit) Sales Returns and Allowances (Credit)

(7)	19— Jan. 30	C. C. Winks		\$25 00					
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(Debit) Store Salaries (Credit)

(8)	19— Jan. 31	Cash		\$200 00					
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FORM 7

H. J. FINLEY

STATEMENT OF INCOME, PROFIT AND LOSS

Jan. 6, 19— to Jan. 31, 19—

Sales.....	\$ 600.00	
Less: Sales Returns and Allowances.....	25.00	
Net Sales.....		\$575.00
Cost of Sales:		
Purchases.....	\$5,000.00	
Less: Purchase Returns and Allowances.....	500.00	
Net Purchases.....	4,500.00	
Inventory, Jan. 31, 19—.....	4,300.00	
Cost of Goods Sold.....		200.00
Gross Profit.....		\$375.00
Expenses:		
Store Salaries.....		200.00
Net Profit (increasing ownership).....		\$175.00

The statement of income, profit and loss (Form 7) shows the profit resulting from buying and selling goods for the month of January. Only operating accounts, namely, expenses and incomes, are used in its preparation. The \$175 net profit for the month increases Finley's investment or capital by that amount. These operating accounts have temporarily recorded the changes in ownership during the period. At Jan. 31, they are summarized to ascertain whether a loss or gain has resulted from operations.

FORM 8

H. J. FINLEY

STATEMENT OF OWNERSHIP

Jan. 6, 19— to Jan. 31, 19—

Owner's Investment, Jan. 6, 19—	\$10,000.00
Withdrawal of Investment (cash)	500.00
Net Investment	9,500.00
Profit from Operations	175.00
Owner's Investment, Jan. 31, 19—	<u>\$9,675.00</u>

The statement of ownership shows the factors which have brought about the difference in net worth from the beginning to the end of the 1-month period. Finley's investment at the beginning of the period was \$10,000. It was decreased by a \$500 withdrawal. It might also have been decreased by a loss from operations. Since a profit of \$175 was made for the month, the investment was increased by that figure. Had Finley made any additional cash or property investment, it would have served to increase his ownership at the close of the period.

The statement of ownership is the connecting link between the statement of income, profit and loss, and the balance sheet. The ownership interest at the close of the period (the last item in the statement of ownership) is the figure used in the balance sheet under the caption of H. J. Finley, Capital.

FORM 9

H. J. FINLEY

BALANCE SHEET

Jan. 31, 19—

Assets		Liabilities and Ownership	
<i>Current:</i>		<i>Current Liabilities:</i>	
Cash.....	\$ 6,300.00	<i>Accounts Payable:</i>	
<i>Accounts Receivable:</i>		Engineer's Sup-	
C. C. Winks.....	575.00	ply Co.....	\$1,500.00
Inventory of Mer-		<i>Ownership:</i>	
chandise.....	4,300.00	H. J. Finley, Capi-	
		tal.....	9,675.00
<i>Signed assets</i>	<u>\$11,175.00</u>		<u>\$11,175.00</u>
<i>much</i>			

The balance sheet portrays the financial condition of Finley's business at Jan. 31, 19—. Capital accounts only are used in its preparation. The assets of the business total \$11,175. The business owes creditors \$1,500. The difference between the assets and liability is \$9,675, which represents Finley's ownership. This is the figure which was determined in the statement of ownership. In the balance sheet may be seen also the existence of the ownership equation. The total value of the assets minus the total value of the liabilities equals the ownership interest. Or the asset values equal the liability values plus the ownership interest.

In developing the principles of debit and credit, the individual proprietorship type of business organization was used. *The fundamental accounting principles are the same for all forms of business, regardless of the type of business organization, whether it be sole proprietorship, a partnership, or a corporation.*

There are important technical activities which must be performed to bridge the gap between the debit and credit principles and the preparation of financial statements. They are described under separate headings, namely:

1. Recording plant transactions.
2. Ledger operations.
3. Preparation of working papers.
4. Adjustments for accruals, prepayments, depreciation, and reserves.

Questions

1. What is meant by a business transaction?
2. Give some illustrations of business transactions.
3. What record is made of the values represented in each business transaction?
4. An analysis of every business transaction reveals what effect upon the capital or operating accounts?
5. State the four fundamental rules of debit and credit underlying accounting.
6. What name is given to the left-hand side of the account? To the right-hand side?
7. When is an asset account debited?
8. When is an ownership account credited?
9. What is the simplest form of stating the ownership equation?
10. State the necessity for using accounts to record business transactions.
11. Describe the function of the Purchases account
12. When is an expense account debited?
13. When is a liability account credited?
14. When is an asset account credited?
15. When is a liability account debited?
16. When is an ownership account debited?
17. What is the purpose of the owner's Personal account?
18. When is an expense account credited?
19. State the significance of having a separate account to record returns of and allowances on purchases.
20. Give a detailed analysis of a sales transaction.
21. In what manner is the profit on sales ascertained in actual practice?
22. When is an income account credited? Debited?
23. Why does an income account have a credit balance?
24. Why is it considered good practice to record in a separate account returns of and allowances on sales?
25. Why does an expense account have a debit balance?
26. What is the value of knowing the debit and credit table?
27. Of what importance are the ledger accounts?
28. What function is performed by each of the following financial statements:
 - a. Statement of income, profit and loss.
 - b. Statement of ownership or capital.
 - c. Balance sheet.

CHAPTER IV

RECORDING PLANT TRANSACTIONS

1. The Inadequacy of the Ledger.

The use of ledger accounts was developed in Chap. III. The need for other books of record, particularly those found in the plant, is now considered. In the ledger the transactions are split into their component elements of debit and credit. The debits and credits are recorded under variously labeled accounts as assets, liabilities, ownership, expenses and incomes. Such a record by itself is inadequate because:

1. There is no chronological record of the daily transactions. Such a record is invaluable for future reference.
2. A complete record of the transaction, the debit and credit, cannot be seen as a whole.
3. It is frequently impossible to show a complete explanation for the transaction in the ledger.
4. In a large plant so many business transactions take place that it would be a physical impossibility to record the transactions directly in the ledger.

These disadvantages may be avoided. In practice the transactions are first recorded in a book known as the journal. To classify effectively the business transactions several journals are used. Those found in most frequent use are:

1. The Cash Receipts Journal.
2. The Cash Disbursements Journal.
3. The Sales Journal.
4. The Purchase Journal or Voucher Register.
5. The General Journal.

There is no standard form for the journal. The most common ruling, however, is shown below:

FORM 10.—TWO-COLUMN JOURNAL

Journal					Page No.	
Date	Name of Accounts	Explanation	L e d g e r F o l i o	Amount	Amount	

The use made of the various columns is inserted within the above form, making them self-explanatory.

2. Procedure in Recording Transactions.

It is highly important to learn how to record transactions correctly in the books of original entry. This process is termed "journalizing." There is an accounting maxim which says: "A good journalizer, a good accountant." Journalizing is the beginning of the accounting process. If the transaction is handled correctly in the initial stage, its ultimate effect upon ownership will be properly reflected. A clear understanding of the transaction is the first requisite before recording in the journal. Logical reasoning must be employed in analyzing the transaction. The transaction should always be analyzed from the owner's point of view. In this manner the debit and credit may be ascertained with the possibility of errors reduced to a minimum.

An analysis of any transaction requires an adequate knowledge of the classification of accounts. This is necessary in order to know what group of accounts is involved. For every transaction the student should ask himself the following questions. What has been increased or decreased, a capital account or an operating account? If the former, was it an asset, a liability, or ownership? If the latter, was it an

expense or income? Even with these questions satisfactorily answered, the analysis is not complete. The student must also be familiar with the names of the most common accounts for assets, liabilities, ownership, expenses and incomes. (Refer to Chart 2, Chap. II.) Perhaps a new name will have to be coined to record properly the debit or credit for the transaction. Always strive to use a concise and specific account title if such is the case. At the same time the rule of reason should apply, in order that the classification will not be too intricate. Should the occasion arise for recording the cost value of four turret lathes, a planer, two drill presses, and a multiple punch, it would not be necessary to open eight different accounts. One account for Machinery would suffice, in which would be recorded the cost value of each piece.

After the analysis has disclosed what accounts have been affected, and whether the effect is to increase or decrease them, the debit and credit table should then be consulted. The principles developed and set forth in Chart 4 will aid in ascertaining whether the account should be debited or credited.

3. Importance of Correct Analysis.

The debits and credits recorded in the books of original entry ultimately appear in the statement of income, profit and loss, statement of ownership and the balance sheet. If the debits and credits are erroneously recorded, the statements will reflect the errors. Incorrect analysis of transactions, therefore, means a misstatement of ownership. To avoid the possibility of incorrect analysis, emphasis is again placed upon the ability to differentiate between capital and operating accounts.

4. Capital and Operating Expenditures.

An expenditure does not necessarily mean an immediate outlay of cash. The purchase of a delivery truck on a 12-month payment plan constitutes an expenditure. The purchase of fuel and power, and payment of wages are also expenditures. Either the present or future outlay of cash for an asset or an expense is considered an expenditure. The influence upon the periodic statements and ultimately upon the ownership account reverts to the manner in which expenditures were recorded in the books of original entry.

Capital expenditures and operating expenditures must not be confused.

Capital expenditures are made for additions, betterments, improvements, and replacements of fixed assets. An expenditure that increases the value or productivity of a fixed asset is considered a capital expenditure. An expenditure should be capitalized when the business will receive the benefit from it for more than one accounting or fiscal period.

Operating expenditures are those incurred for the maintenance of a fixed asset or for current operations. Such expenditures do not increase the value of any asset. Repairs may be made in order to maintain the machinery at its maximum or ordinary degree of efficiency. Such an expenditure does not increase the value of the machine. Operating expenditures are treated as expenses.

What definitely happens when the two types of expenditures are confused? A capital expenditure debited to an expense account causes expense to be overstated with a resultant understatement of profit and ownership. On the other hand, if an operating expenditure is debited to an asset account, expense is understated. This causes profits to be overstated, and, accordingly, ownership is overstated. Again, beware of confusing the two types of expenditures when analyzing and journalizing the transaction.

5. Sorting the Transactions.

The nature of the transaction determines the book in which it is first recorded. The transaction is entered in the cash receipts journal if cash has been received in the business. All payments of cash are entered in the cash disbursements journal. In the sales journal are recorded all sales on account to customers. Only the purchase of materials or stock-in-trade is recorded in the purchase journal. Transactions which cannot be classified under any of these four groups are recorded in the general journal.

6. The Cash Receipts Journal.

Transactions involving the receipt of cash are entered in the cash receipts journal. Some of the more common sources of cash receipts are:

1. Capital contributions by owner.

2. Sale of goods for cash.
3. Payment received on account from customers.
4. Receipt of payment on a note receivable.
5. Commissions received.
6. Rentals received.
7. Interest on notes receivable and bank deposits.

Every entry in the cash receipts journal implies that cash has been increased because of the entry in this particular book. The implication thereby eliminates the necessity of writing the word "cash" as a part of each entry. Only the source of the receipt is named in the account column, with suitable explanation and the amount in the proper columns.

An illustration of a cash receipts journal is shown below. In the upper left-hand corner of the page "CR1" denotes the page number of the journal.

FORM 11

Cash Receipts Journal				CR1	
19__					
Jan.	6	H. J. Finley, Capital	Original investment	\$10,000 00	
	31	Cash (Dr.)			\$10,000 00
Feb.	8	Sales	Cash sales for the week ended today	\$ 175 00	
	15	Sales	"	450 00	
	22	Sales	"	500 00	
	27	C. C. Winks	On account	575 00	
	28	Sales	Cash sales for the week ended today	844 00	
	28	Cash (Dr.)			\$ 2,544 00

The receipt of cash naturally arises from some source. The name of the source is invariably entered as the name of the account. Cash received from a customer in payment of an account is entered opposite the customer's name in the account column. The receipt of income bears the name of

the account in accordance with its nature, namely, Sales, Commissions Earned, Interest Received, etc.

The total of all items entered in the cash receipts journal represents the receipt of and increase in the asset, cash. The total cash received during the month of February, in the above illustration, was \$2,544. This amount will appear in the Cash account as a debit, being an increase in the asset, cash.

The individual amounts totaling \$2,544 represent credits to the respective accounts named in the account column. Thus the equality of debit and credit is maintained in the ledger. The total of the four entries for sales, amounting to \$1,969, is an increase in income. The credit of \$575 to C. C. Winks is a decrease in an asset.

There are several rules to remember in recording transactions in the cash receipts journal:

1. Always list the individual amounts of the cash received in the left-hand money column.

2. Show only totals and balances in the right-hand money column.

3. Leave no space blank in the money column. If no figures are required, draw a line through the space. This prevents the insertion of fictitious amounts for fraudulent purposes.

4. Rulings for the cash journal should be as follows, at the close of the month:

- a. A single line across the left-hand money column only.

- b. After the total is placed in the right-hand money column, a double line should be ruled across both money columns and the ledger folio column. After a break in the line across the account and explanation columns, the double line should be continued across the date column. The purpose of the double line is to portray clearly the transactions occurring in any one month.

All four rules also apply to the cash disbursements journal. The fourth rule likewise applies to the sales and purchase journals.

7. The Cash Disbursements Journal.

All transactions pertaining to the payment of cash are recorded in this journal. The payment of cash is always made for some expense or asset, or to decrease a liability, ownership, or income. Some illustrations of items appearing in the cash disbursements journal are listed below:

1. Payment to creditor (accounts payable) on account.
2. Payment for expense items purchased for cash, such as:
 - a. Salaries and wages.
 - b. Rent and taxes.
 - c. Telephone, light, heat and power.
 - d. Expense and supplies for office, store and delivery equipment.
3. Cash withdrawals by owner.
4. Payment for fixed assets purchased by cash.

Each entry in the cash disbursements journal implies that cash has been paid out or decreased. A knowledge of this fact makes it unnecessary to write the word "cash" each time an entry is recorded. The purpose for which payment is made is written as the name of the account to be charged in the "account" column. A model form of this journal may be seen below.

FORM 12

Cash Disbursements Journal				CD1
19—				
Jan.	25	Engineer's Supply Co.	On account	\$3,000 00
	27	H. J. Finley, Personal	Personal use	500 00
	31	Store Salaries	Clerks for month	200 00
	31	Cash (Cr.)		\$3,700 00
Feb.	1	Rent	Penn Realty for January and February	\$ 250 00
	3	Store Expense	Telephone for January	4 00
	6	Furniture and Fixtures	Cash register	225 00
	13	Store Expense	Electric power	18 00
	17	Purchases	Drawing pens	27 00
	18	India Ink Co.	Account in full	147 00
	23	Office Expense	Stationery	14 00
	28	Store Salaries	Clerks' salaries	200 00
	28	Office Salaries	Bookkeeper	80 00
	28	Notes Payable	Engineer's Supply Co.	1,500 00
	28	Interest Expense	On above note	7 50
	28	Cash (Cr.)		\$2,472 50

The name placed in the account column should be the name of the account to be debited, and not necessarily the party to whom the cash payment is made. Rent was paid to the Penn Realty Company, but their name should not appear in the account column. The point of importance is that an expense has been incurred. The nature of the expense is rent, and its cost is placed in an account bearing such a caption.

The sum of all the individual items entered in the cash disbursements journal is the amount of cash disbursements. The cash disbursed in January totaled \$3,700 and in February \$2,472.50. These totals represent credits to the asset Cash, since the cash was decreased by that amount.

Each individual disbursement constitutes a charge or debit to the account named in the account column. The debits may be analyzed in terms of the debit and credit table as follows:

Engineer's Supply Co.....	\$3,000.00, decrease in a liability.
H. J. Finley, Personal.....	500.00, decrease in ownership.
Store Salaries.....	200.00, increase in expense.
Rent.....	250.00, increase in expense.
Store Expense.....	4.00, increase in expense.
Furniture and Fixtures.....	225.00, increase in asset.
Purchases.....	27.00, increase in expense.
India Ink Company.....	147.00, decrease in liability.
Office Expense.....	14.00, increase in expense.
Store Salaries.....	200.00, increase in expense.
Office Salaries.....	80.00, increase in expense.
Notes Payable.....	1,500.00, decrease in liability.
Interest Paid.....	7.50, increase in expense.

8. The Purchase Journal.

Only the purchase of merchandise on account, which is to be sold again, is recorded in this journal. The purchase of items of expense or fixed assets on account are not recorded in this book, but are recorded in the general journal.

Entry is not made in the purchase journal until the merchandise purchased has been received and checked with the invoice as to proper count, weight, etc.

Only the name of the firm from which the purchase is made is recorded in the purchase journal. That it is a purchase

is understood, since it is recorded in this particular book. A model purchase journal may be seen below.

FORM 13

Purchase Journal					P1
19					
Jan.	10	Engineer's Supply Co.	30 days net	\$5,000 00	
	31	Purchases (Dr.)			\$5,000 00
Feb.	8	India Ink Co.	2/10—n/30	\$ 150 00	
	19	Best Paper Corp.	n/30	477 00	
	28	Standard Tool Co.	1/10—n/30	1,943 50	
	28	Purchases (Dr.)			\$2,570 50

The terms offered with the various purchases are listed in the explanation column. They are ascertained from the creditor's invoice. "Net 30 days" means that no cash discount will be allowed for prompt payment. In such a case the bill is supposed to be paid in full in 30 days from date of the invoice. "1/10—n/30," or "2/10—n/30" denotes that a cash discount of 1 or 2 per cent will be allowed if the invoice is paid within 10 days from its date.

Each invoice recorded in the purchase journal, in the name of the creditor, represents an obligation incurred. This means an increase in a liability in each case, and consequently a credit to an account payable account. The total of the individual credits to the account payable accounts is a debit to the Purchase account which is an increase in expense.

A copy of an invoice is shown on p. 51.

The purchase transactions are entered in the purchase journal after each creditor's invoice has been checked with the receipt of the goods, and is given stamped approval by some designated employee of the buyer, usually a clerk under the auditor.

In like manner a business concern bills each of its customers for all goods sold on account. Copies of customers' invoices represent the individual sales transactions, and thereby are the authority for making the entries in the sales journal.

9. The Sales Journal.

Within the covers of this journal are recorded the sales of merchandise on account to the customers. Cash sales may

ORIGINAL INVOICE
BEST PAPER CORPORATION
 FACTORY AND OFFICE
 ROCHESTER, PENNSYLVANIA

SHIPPED TO

H. J. Finley
 3640 Fifth Ave.
 Pittsburgh, Pa.

SOLD TO

Above

DATE February 18, 19__

INVOICE NO. B 987

CAR NO. Express

SHIPPED FROM Rochester Warehouse

VIA --

B/L NO. --

F. O. B. SHIPPING POINT

YOUR ORDER 3

YOUR REQ.

TERMS: N/30

OUR ORDER 42376

QUANTITY	DESCRIPTION	PRICE	AMOUNT
150 yds.	Best 36" Tracing Paper	.10 ¹ / ₂	\$ 15.00
200 "	Best 54" White Linen Paper	.25	50.00
300 "	Veribest 60" Cream Linen Paper	.40	120.00
400 "	Best 72" Tracing Paper	.30	120.00
344 "	Best 72" White Linen Paper	.50	172.00
			<u>\$477.00</u>
SPECIAL INSTRUCTIONS:			

NOTE:- WHERE BREAKAGE IS CONCEALED, BE SURE TO MAKE CONCEALED BREAKAGE CLAIM AGAINST TRANSPORTATION COMPANY.

or may not be shown therein. If they are included, the principle of cross-checking the cash arises. This point is explained in Sec. 11 of this chapter.

Entries are made in the sales journal from duplicate copies of the invoices sent to the customer covering the bill of sale. The name of the customer to whom credit has been extended

is placed in the account column. Seldom is there necessity for entering any information in the "explanation" column, unless it is the number of the customer's invoice. With such reference it is quite easy to refer to the filed copy of the invoice for any information.

A form of a sales journal is shown below:

FORM 14

Sales Journal					\$1
19—					
Jan.	28	C. C. Winks	n/30	\$600 00	
	31	Sales (Cr.)			\$600 00
Feb.	3	Johnson & Dale	1/10—n/30	\$166 60	
	6	L. C. Sullivan	ditto	21 17	
	8	C. R. Moxey	"	2 29	
	14	Morey & Fox	"	76 38	
	20	J. H. Hayward	"	155 71	
	25	Newlin & Ross	"	421 10	
	28	Sales (Cr.)			\$843 25

The individual amounts entered in the sales journal represent the amount the various customers have promised to pay. These promises constitute an increase in assets. The total of the individual debits to the respective customers' accounts is the income from charge sales. This increase in income is shown as a credit in the Sales account.

10. The General Journal.

Transactions which are not recorded in the cash receipts or disbursements journals, the sales and purchase journals are listed below:

1. The return of or allowances on purchases.
2. The return of or allowances on sales.
3. Purchase discount allowed by creditors.
4. Sales discount allowed to customers.
5. Receipt of a note from a customer.
6. Issuance of a note to a creditor.
7. Withdrawal of merchandise by owner.
8. The purchase of fixed assets on account.
9. The purchase of expense items on account.

10. Opening entries when assets other than cash are contributed by the owner.

11. Correcting entries covering errors made in recording transactions in the wrong account.

12. Adjusting entries.

13. Closing entries.

An illustration of some transactions recorded in the general journal is shown below:

FORM 15

General Journal				J1
19—				
Jan.	28	Engineer's Supply Co. Purchases Returns and Allowance To record credit memo for goods returned	\$ 500 00	\$ 500 00
	30	Sales Returns and Allowances C. C. Winks To record credit allowed on paper damaged in shipment	25 00	25 00
Feb.	1	Engineer's Supply Co. Notes Payable To record issue of 6 % 30-day note dated Jan. 30	1,500 00	1,500 00
	10	H. J. Finley, Personal Purchases To record cost of goods with- drawn for personal use	10 00	10 00
	18	India Ink Co. Purchase Discount To record discount received in payment of invoice Feb. 8	3 00	3 00

Pertinent facts to remember when recording transactions in the general journal are:

1. Always enter the debit first, followed by the credit.

2. Write the name of all accounts to be debited, in various entries, in an even vertical line from the top to the bottom of the page.

3. The name of all accounts credited should be indented at least 1 inch to the right of the debit accounts.

4. Show adequate explanation for each entry made. This is of importance because of the wide variance in the nature of transactions entered in the general journal.

5. Leave a space between the explanation of each entry and the debit of the following entry.

11. Recording Same Transaction in Two Journals.

The necessity for recording the same transaction in two journals occasionally occurs. A case will illustrate the method. It is convenient to have the total sales figure in the sales journal in some cases. In this event both the charge and cash sales may be placed in the sales journal. At the same time the cash sales must also appear in the cash receipts journal. The principle of cross-checking is used to eliminate the duplication of amounts that would be carried to the ledger account, Sales.

FORM 16

Cash Receipts Journal					CR1
19—					
Feb.	8	Sales	Cash sales for week	✓ \$175 00	
	15	Sales	" " " "	✓ 450 00	
	22	Sales	" " " "	✓ 500 00	
	27	C. C. Winks	On account	575 00	
	28	Sales	Cash sales for week	✓ 844 00	
		Cash (Dr.)			\$2,544 00

The cash sales are placed in the cash receipts journal in order to show the total amount of cash received. The same cash sales are placed in the sales journal to have the total daily, weekly, or monthly sales in the sales journal. Such procedure saves much time in posting. Where these items are checked "✓" in the ledger folio column, no current postings are made. A dual entry of the same transaction involves this principle of cross-checking in order that the ledger be kept in balance.

FORM 17

Sales Journal				S1	
19— Feb.	3 Johnson & Dale	1/10—n/30	\$166 60		
	6 L. C. Sullivan	"	21 17		
	8 C. R. Moxey	"	2 29		
	8 Cash	Sales for week ended the 8th	✓ 175 00		
	14 Morey & Fox	1/10—n/30	76 38		
	15 Cash	Week ended 15th	✓ 450 00		
	20 J. H. Hayward	1/10—n/30	155 71		
	22 Cash	Week ended 22nd	✓ 500 00		
	25 Newlin & Ross	1/10—n/30	421 10		
	28 Cash	Week ended 28th	✓ 844 00		
	Sales (Cr.)				\$2,812 25

12. Advantages of Subdivision of the Journal.

Several advantages result from the use of several books of original entry:

1. A conservation of time and space results in recording transactions. The necessity for writing the words "cash," "sales," and "purchases" is eliminated for such transactions when they are recorded in the respective journals.

2. Fewer postings are required. With fewer accounts to transfer to the ledger, the possibility of error in posting is reduced.

3. It eliminates the necessity for writing detailed explanations in all books but the general journal.

4. The segregation of transactions of like nature in special journals makes it easier to locate past records.

5. It permits a subdivision of clerical labor in recording transactions.

6. Responsibility for work done in connection with these books is localized when clerks are assigned to specialized work in connection with the cash, sales, or purchase journals.

Questions

1. Why would the ledger in itself be inadequate if all of the business transactions were shown only in it?

2. In what books are the transactions first shown in actual practice?

3. What books of original entry are found in most common use?

4. How does the ruling of the journal differ from the ledger ruling?
5. What is meant by "journalizing?"
6. State the four fundamental rules underlying the principle of debit and credit.
7. What is the procedure which must take place before any transaction may be properly recorded in the journal?
8. When analyzing a transaction, how can you determine whether it affects an asset, a liability, an ownership, an income, or an expense account?
9. What is the result of making an incorrect analysis of any business transaction?
10. Contrast an expenditure and an expense.
11. Differentiate between a capital and an operating expenditure.
12. What is the result of confusing an operating expenditure with a capital expenditure?
13. Name as many sources as possible from which cash receipts arise.
14. In what manner are the receipts of cash recorded in the cash receipts journal?
15. What is the debit and credit analysis applied to transactions entered in the cash receipts journal?
16. For what general purposes are cash payments usually made?
17. What information is shown when a transaction is entered in the cash disbursements journal?
18. What is the debit and credit analysis applied to transactions entered in the cash disbursements journal?
19. If a check were given to a railroad company in payment of a freight bill, what information would be placed in the account column?
20. What is the nature of the transactions which are entered in the purchase journal?
21. The names entered in the account column of the purchase journal represent what type of accounts?
22. What is the debit and credit analysis applied to the purchase journal?
23. What is the nature of the transactions entered in the sales journal?
24. The names entered in the account column of the sales journal represent what type of accounts?
25. What is the debit and credit analysis applied to the sales journal?
26. Give some illustrations of transactions which are placed in the general journal, where there are also in use a cash receipts, cash disbursements, purchases, and sales journals.
27. How does the entry of a transaction in the general journal differ from an entry in some one of the other special journals?
28. Why is it that some transactions require entry in two journals?
29. Dual entry of the same transaction in two different journals involves what principle?
30. What advantages arise from the use of special journals?

CHAPTER V

LEDGER OPERATIONS

1. The Purpose of the Ledger.

The purpose and use of the ledger has been explained in detail in the foregoing chapters. To summarize, there must be a detailed record of all transactions recorded in the various capital and operating accounts to effect adequate control over the business. The function of the ledger is to record and classify the transactions in separate accounts with the various types of assets, liabilities, ownership, incomes, and expenses.

2. Posting to the Ledger.

While a ledger is required in any accounting system, it is quite inadequate in itself. In actual practice, the business and plant transactions are recorded, first in the journals, and then transferred to the ledger. The process of transferring debits and credits from the journals to the ledger accounts is known as "posting." Postings may be classified as "current" and "summary."

Current postings are those made from day to day. Daily entries in the various journals should be posted as soon as possible after the entry is made, for two reasons. First, it avoids an accumulation of posting work at the close of the month. Second, it maintains an up-to-date balance in the customers' and creditors' accounts as well as in the plant-operating accounts. The engineer is not interested in the personal accounts, but he does have an interest in keeping the books posted up to date. Laxity in posting means delay in preparation of statements. Delays are not tolerated in the efficiently operated plant.

Summary postings are those made at the close of each month. The column totals from the cash, purchases and sales journals are summaries posted respectively to the Cash, Purchases and Sales accounts in the ledger.

The journal entries described in the preceding chapter and posting as described in this chapter are typical of the small and medium-sized establishments. The idea must not be formed that this is the one and only way in which transactions are handled. Only in the smaller business concerns are the transactions journalized and posted longhand by pen and ink. Modern business practice carries on its journalizing and posting with bookkeeping machines. The operator frequently knows nothing of accounting theory, although the more efficient operator is one who is at least familiar with double-entry bookkeeping principles. In many of the larger business concerns, electric tabulating and sorting machines, with the use of the punch card, collect the data for the summary ledger postings and many other detailed analyses. A wide chasm exists between the old-fashioned hand-written set of books and the modern system of electric tabulation. The fundamental principles, however, remain unchanged. The fundamental accounting principles underlie the more elaborate systems as well as the simpler ones. To be thoroughly familiar with the interpretation of financial statements, and the meaning and significance of all items therein, one should be acquainted with the detailed principles of journalizing and posting.

3. Principles of Posting.

Certain mechanical principles must be adhered to during the posting process. When an amount is posted from any journal to the ledger, the page number of the journal must be entered in the "journal folio" column of the ledger. In turn, the number of the page on which the ledger account appears is entered in the "ledger folio" column of the journal. A complete cross-reference is thereby created. This reference is invaluable if it becomes necessary to check for an error in posting.

4. Posting the Cash Receipts Journal.

The total of all items entered in the cash receipts journal represents the receipt of cash from many sources. The total constitutes an increase in the asset, cash; hence, it is posted as a debit to the Cash account. This summary is usually posted at the close of the month. When the daily cash receipts are

numerous, a subtotal in pencil figures is made daily in order to balance the cash deposit or amount on hand.

The individual items or entries in the cash receipts journal are posted daily as credits to the respective accounts named in the journal when the entry was made.

The cash receipts journal shown in Chap. IV is used to illustrate the posting procedure as follows:

FORM 18

Cash Receipts Journal						CR1
19—						
Jan. 6	H. J. Finley, Capital	Original investment	15	\$10,000	00	
31	Cash (Dr.)		1			\$10,000 00
Feb. 8	Sales	Cash sales for the week ended today	✓	175	00	
15	Sales	" " "	✓	450	00	
22	Sales	" " "	✓	500	00	
27	C. C. Winks	On account	2	575	00	
28	Sales	Cash sales for the week ended today	✓	844	00	
28	Cash (Dr.)		1			\$ 2,544 00

The above general items are then posted as follows to their respective ledger accounts:

General Ledger

H. J. Finley, Capital

15

19—										
Jan. 6	Cash	CR1	\$10,000	00						

Cash

1

19—										
Jan. 31	Jan. Receipts	CR1	\$10,000	00						
Feb. 28	Feb. Receipts	CR1	2,544	00						

C. C. Winks

2

19—										
Feb. 27	Cash	CR1	\$575	00						

In reality the entries in the cash receipts journal represent compound entries, which may be illustrated as follows:

				Postings made
For January	{	Cash.....	\$10,000	As a summary
		H. J. Finley, Capital.....	\$10,000	Currently
For February	{	Cash.....	2,544	As a summary
		Sales.....	1,969	From Sales
		C. C. Winks.....	575	Journal Currently

The cash sales (\$1,969) for February are also entered in the sales journal and included in the total posted from that journal (see page 65).

5. Posting the Cash Disbursements Journal.

The total of the individual items recorded in the cash disbursements journal represents payment of, and consequently a decrease in, the asset, cash. Accordingly, the total cash disbursed is posted as a credit to the cash account. This summary posting is made at the end of each month.

The individual items recorded in this journal represent increases in expenses and assets, or decreases in liabilities, ownership, and incomes; hence they are posted as debits to the respective ledger accounts named in the account column of the journal.

The cash disbursements journal illustrated in Chap. IV is used to show the posting procedure as follows:

FORM 19

Cash Disbursements Journal						CD1
19—						
Jan.	25	Engineer's Supply Co.	On account	10	\$3,000 00	
	27	H. J. Finley, Personal	Personal use	16	500 00	
	31	Store Salaries	Clerks	21	200 00	
	31	Cash (Cr.)		1		\$3,700 00
Feb.	1	Rent	Penn Realty Co.	22	\$ 250 00	
	3	Store Expense	Telephone	23	4 00	
	6	Furniture and Fixtures	Cash register	9	225 00	
	13	Store Expense	Electric power	23	18 00	
	17	Purchases	Drawing pens	✓	27 00	
	18	India Ink Co.	Account in full	11	147 00	
	23	Office Expense	Stationery	24	14 00	
	28	Store Salaries	Clerks	21	200 00	
	28	Office Salaries	Bookkeeper	25	80 00	
	28	Notes Payable	Engineer's Supply Co.	14	1,500 00	
	28	Interest Expense	Note	26	7 50	
	28	Cash (Cr.)		1		\$2,472 50

The items in the above journal are then posted to the ledger accounts as follows:

General Ledger

Cash										1
19—						19—				
						Jan. 31	Jan. Payments	CD1	\$3,700	00
						Feb. 28	Feb. "	CD1	2,472	50
Engineer's Supply Co.										10
19—										
Jan. 25	Cash		CD1	\$3,000	00					
H. J. Finley, Personal										16
19—										
Jan. 31	Cash		CD1	500	00					
Store Salaries										21
19—										
Jan. 31	Cash		CD1	200	00					
Feb. 28	"		CD1	200	00					
Rent										22
19—										
Feb. 1	Cash		CD1	\$250	00					
Store Expense										23
19—										
Feb. 3	Cash		CD1	\$ 4	00					
Feb. 13	"		CD1	18	00					
Furniture and Fixtures										9
19—										
Feb. 6	Cash		CD1	\$225	00					
India Ink Co.										11
19—										
Feb. 18	Cash		CD1	\$147	00					

Office Expense										24
19— Feb. 23	Cash	CD1	\$14 00							
Office Salaries										25
19— Feb. 28	Cash	CD1	\$80 00							
Notes Payable										14
19— Feb. 28	Cash	CD1	\$1,500 00							
Interest Expense										26
19— Feb. 28	Cash	CD1	\$7 50							

The transactions recorded in the cash disbursements journal are shown below in compound entry form. The manner in which the postings are handled may be seen with greater ease.

			Postings made
For January	Engineer's Supply Com- pany.....	\$3,000.00	Currently
	H. J. Finley, Personal...	500.00	Currently
	Store Salaries.....	200.00	Currently
	Cash.....	\$3,700.00	As a summary
	Rent.....	250.00	Currently
	Store Expense.....	4.00	Currently
	Furniture and Fixtures..	225.00	Currently
	Store Expense.....	18.00	Currently
	Purchases.....	27.00	From Purchase Journal
	India Ink Company.....	147.00	Currently
For February	Office Expense.....	14.00	Currently
	Store Salaries.....	200.00	Currently
	Office Salaries.....	80.00	Currently
	Notes Payable.....	1,500.00	Currently
	Interest Expense.....	7.50	Currently
	Cash.....	\$2,472.50	As a summary

The cash purchase of \$27, made on Feb. 17, is entered also in the purchase journal. The total purchases for the month will be posted as one figure from the purchase journal.

6. Posting the Purchase Journal.

The sum of all the purchases of merchandise made during the month constitutes an increase in expense. This total is

India Ink Company

11

[illegible]

Best Paper Corp.

12

[illegible]

Standard Tool Company

13

[illegible]

Posting the purchase journal is better visualized in compound entry form as follows:

			<u>Postings made</u>
For	{	Purchases..... \$5,000.00	As a summary
January		Engineer's Supply Co..... \$5,000.00	Currently
		Purchases..... 2,597.50	As a summary
	{	India Ink Co..... 150.00	Currently
For		Cash..... 27.00	From cash disbursements
February		Best Paper Corporation..... 477.00	Currently
		Standard Tool Co..... 1,943.50	Currently

7. Posting the Sales Journal.

The total of all amounts recorded daily in the sales journal constitutes an increase in income. This summary is posted, therefore, as a credit to the Sales account. This posting takes place at the close of the month.

The separate items entered in the sales journal comprise sales made to the customers on account. An exception to this principle exists when "cash sales" are entered in the sales journal as well as in the cash receipts journal. The name of the customer denotes the increase of an asset, *i.e.*, an increase in the amount owing to the business. Each amount for which the customer becomes indebted is posted as a debit to the respective customer's account named in the account column of the sales journal.

Posting the sales journal is illustrated below:

FORM 21

Sales Journal						\$1
19—						
Jan. 28	C. C. Winks	n/30	2	\$600 00		
	Sales (Cr.)		17		\$ 600 00	
Feb. 3	Johnson & Dale	1/10—n/30	3	\$166 60		
6	L. C. Sullivan	"	4	21 17		
8	C. R. Moxey	"	5	2 29		
8	Cash Sales		✓	175 00		
14	Morey & Fox	"	6	76 38		
15	Cash Sales		✓	450 00		
20	J. H. Hayward	"	7	155 71		
22	Cash Sales		✓	500 00		
25	Newlin & Ross	"	8	421 10		
28	Cash Sales		✓	844 00		
	Sales (Cr.)		17		\$2,812 25	

The items entered in the above sales journal are then posted to the ledger accounts:

General Ledger

Sales						17
19—						
Jan. 31	Jan. Sales	\$1	\$ 600 00			
Feb. 28	Feb. Sales	\$1	2,812 25			

C. C. Winks						2
19—						
Jan. 28	Sales	\$1	\$600 00			

Johnson & Dale						3
19—						
Feb. 3	Sales	\$1	\$166 60			

Purchase Returns and Allowances

20

						Eng. Sup. Co.	J1	\$	500	00
--	--	--	--	--	--	------------------	----	----	-----	----

Sales Returns and Allowances

18

[illegible]

C. C. Winks

2

[illegible]

Notes Payable

14

[illegible]

H. J. Finley, Personal

16

19—										
Feb. 10	Purchases	J1	\$	10 00						

Purchases

19

[illegible]

India Ink Co.

11

[illegible]

27

[illegible]

At the close of any accounting period, after posting is complete, the majority of the accounts in the ledger will have a debit or credit balance. Some accounts with customers and creditors will be balanced and ruled off. Cash will have been received and disbursed to offset charges to customers' accounts and credits to creditors' accounts. Other charges and credits for discounts, returns and allowances may also be posted in order to balance these accounts. Illustrations of closed personal accounts are shown as follows:

2

19— Jan. 28	Sales	\$1	\$600 00	19— Jan. 30	Sales Allow-	J1	\$ 25 00
				Feb. 27	Cash	CR1	575 00
			\$600 00				\$600 00

11

[illegible]

1. *Assets*, representing:
 - a. Property owned by the business.
 - b. Amounts customers owe to the business.
2. *Expenses*, covering:
 - a. Purchases.

- b. Manufacturing.
 - c. Distribution or selling.
 - d. Administration.
 - e. Incidental costs.
- 3. *Supplementary Ownership* (Personal account), representing:
 - a. Cash withdrawn by owner for personal use.
 - b. Merchandise withdrawn by owner for personal use.
- 4. *Income Deductions*, representing:
 - a. Sales returns and allowances.
 - b. Sales discounts allowed customers.

Accounts with credit balances at the close of any accounting period, after postings are completed, will fall under one of the following groups:

- 1. *Liabilities*, representing:
 - a. Debts owed by the business.
- 2. *Ownership (Capital)*, representing:
 - a. Investments by owner, or
 - b. Investments plus accumulated profits not withdrawn, or
 - c. Investment minus accumulated losses.
- 3. *Income*, representing:
 - a. Sales of product.
 - b. Incidental earnings.
- 4. *Expense Deductions*, representing:
 - a. Purchase returns and allowances.
 - b. Purchase discounts.

Thus, after all postings are complete, at the close of any accounting period, the open accounts in the ledger reflect a summary of the period's transactions.

10. The Trial Balance.

The trial balance is a list of all of the open accounts in the ledger showing their debit or credit balances. Balances only are used in setting up a trial balance. A trial balance may be taken at any time the postings are completed from all the journals. Always the process is performed at the close of each month. The purpose of the trial balance is twofold.

In the first place, the trial balance tests the mathematical accuracy of the ledger to show whether or not it is "in balance." Some error may have been made in posting, even though all transactions have been properly recorded in the various journals. A debit may have been posted as a credit or *vice versa*. Either a debit or a credit may have been omitted in posting. In event an error is made in posting, the ledger

will not be "in balance." The preparation of the trial balance will show whether *or not* there is conformity with the debit and credit principle previously mentioned, namely, the sum of the debit balances must equal the total of the credit balances. Preparing a trial balance to prove the equilibrium of the ledger is not its chief purpose, although it is prerequisite to the second function.

In the second place, the trial balance summarizes, in concise form, a list of all open account balances with assets, liabilities, ownership, incomes and expenses. This list provides the necessary information from which is prepared the statement of income, profit and loss, statement of ownership, and the balance sheet. Thus, the real purpose of the trial balance is to summarize the ledger accounts in order that the financial statements may be prepared. But this procedure is predicated upon the existence of a "balanced ledger."

Certain mechanical steps must be followed prior to taking off a trial balance. These steps are necessary in connection with every account having more than one debit or credit posting. The steps are:

1. Add the debits, placing the total in small pencil figures under the last posting in the money column.

2. Add the credits in a similar manner.

3. If the debit total is greater than the credit total, a debit balance exists, which is placed in small pencil figures in the explanation column on the debit side of the account.

4. Similar procedure is taken in ascertaining the credit balance of an account.

5. The debit balances and the credit balances are then listed in two separate columns, which forms the trial balance.

The ledger accounts recording the transactions entered in and posted from the illustrative journals in this chapter will be used to illustrate the preparation of a trial balance.

General Ledger

Cash

1

19—					19—				
Jan.	31		CR1	\$10,000 00	Jan.	31		CD1	\$3,700 00
Feb.	28		CR1	2,544 00	Feb.	28		CD1	2,472 50
		6,371.50		12,544 00					6,172 50

C. C. Winks

2

19—						19—					
Jan.	28		S1	\$600	00	Jan.	30		J1	\$25	00
						Feb.	27		CR1	575	00
										\$600	00

Johnson & Dale

3

19—											
Feb.	3		S1	\$166	60						

L. C. Sullivan

4

19—											
Feb.	6		S1	\$21	17						

C. R. Moxey

5

19—											
Feb.	8		S1	\$2	29						

Morey & Fox

6

19—											
Feb.	14		S1	\$76	38						

J. H. Hayward

7

19—											
Feb.	20		S1	\$155	71						

Newlin & Ross

8

19—											
Feb.	28		S1	\$421	10						

Furniture and Fixtures

9

19—									
Feb.	6		CD1	\$225 00					

Engineer's Supply Co.

10

19—					19—				
Jan.	25		CD1	\$3,000 00	Jan.	10	P1	\$5,000 00	
	28		J1	500 00					
Feb.	1		J1	1,500 00					
				\$5,000 00				\$5,000 00	

India Ink Co.

11

19—					19—				
Feb.	18		CD1	\$147 00	Feb.	8	P1	\$150 00	
	18		J1	3 00					
				\$150 00				\$150 00	

Best Paper Corp.

12

					19—				
					Feb.	19	P1	\$477 00	

Standard Tool Company

13

					19—				
					Feb.	28	P1	\$1,943 50	

Notes Payable

14

19—					19—				
Feb.	28		CD1	\$1,500 00	Feb.	1	J1	\$1,500 00	

H. J. Finley, Capital

15

[illegible]

H. J. Finley, Personal

16

[illegible]

Sales

17

[illegible]

Sales Returns and Allowances

18

19—										
Jan.	30		J1	\$25 00						

Purchases

19

19— Jan. Feb.	31 28	P1 P1	\$5,000 00 2,597 50 7,587 50	19— Feb.	10	J1	\$10 00
---------------------	----------	----------	------------------------------------	-------------	----	----	---------

Purchases Returns and Allowances

20

[illegible]

LEDGER OPERATIONS

75

Store Salaries

21

19—												
Jan.	31		CD1	\$200 00								
Feb.	28		CD1	200 00								
				400 00								

Rent

22

19—												
Feb.	1		CD1	\$250 00								

Store Expense

23

19—												
Feb.	3		CD1	\$ 4 00								
	13		CD1	18 00								
				22 00								

Office Expense

24

19—												
Feb.	23		CD1	\$14 00								

Office Salaries

25

19—												
Feb.	28		CD1	\$80 00								

Interest Expense

26

19—												
Feb.	28		CD1	\$7 50								

Purchase Discount

27

						19—						
						Feb.	18		J1		3 00	

The following is a trial balance prepared from the foregoing accounts shown in the ledger of H. J. Finley, at Feb. 28, 19—:

FORM 23
H. J. FINLEY
TRIAL BALANCE
February 28, 19—

Cash.....	\$ 6,371 50	
Johnson & Dale.....	166 60	
L. C. Sullivan.....	21 17	
C. R. Moxey.....	2 29	
Morey & Fox.....	76 38	
J. H. Hayward.....	155 71	
Newlin & Ross.....	421 10	
Furniture and Fixtures.....	225 00	
Best Paper Corporation.....		\$ 477 00
Standard Tool Company.....		1,943 50
H. J. Finley, Capital.....		10,000 00
H. J. Finley, Personal.....	510 00	
Sales.....		3,412 25
Sales Returns and Allowances.....	25 00	
Purchases.....	7,587 50	
Purchases Returns and Allowances.....		500 00
Store Salaries.....	400 00	
Rent.....	250 00	
Store Expense.....	22 00	
Office Expense.....	14 00	
Office Salaries.....	80 00	
Interest Expense.....	7 50	
Purchase Discount.....		3 00
	<u>\$16,335 75</u>	<u>\$16,335 75</u>

11. Reasons Why a Trial Balance May Not Balance.

One has the right to feel justly proud should a correct trial balance be the result of the first effort. And what is the reason for the elation? It means, with few exceptions, that the person in charge of the books has accurately recorded and posted all transactions, and that much grief has been avoided. In event that the trial balance will not balance, it may be the result of one or several reasons. And quite often much woe accompanies the location of the error or errors. Hence, the maxim is "Accuracy First" in recording transactions, posting and taking a trial balance.

The following are reasons why a trial balance may not balance:

1. Error in totaling debits or credits in the ledger accounts.
2. Error in subtracting debits from credits, or *vice versa*, in obtaining the account balances.
3. Error in the addition of the debit or credit column of the trial balance.
4. Omitting a debit balance or a credit balance in preparation of the trial balance.
5. Failure to post a debit amount or a credit amount.
6. Posting a debit amount as a credit amount or *vice versa*.
7. Making a transposition of figures when posting.
8. Making a transplacement of the decimal point when posting.

12. Errors Which Will Not Prevent the Trial Balance from Balancing.

There are two types of errors possible which will not prevent obtaining a trial balance of the ledger, yet the preparation of financial statements from such a trial balance would not reflect a true financial condition. These errors may be classified as follows:

1. Errors of omission.
2. Errors of commission

Errors of omission may be subdivided as follows:

- a. Failure to post both the debit and the credit of the same entry.
- b. Failure to record a transaction.

In either of the above cases, the omission may never be brought to light. It is possible that subsequent inspection of financial statements may bring the omissions to the surface.

Errors of commission may be subdivided as follows:

- a. The wrong amount recorded and posted.
- b. Posting to the wrong account.
- c. Error of principle.
- d. Compensating errors.

Committing any of the four above errors, thus, would not prevent obtaining a trial balance. But the balances in some of the accounts would be affected by the errors, thus resulting in erroneous figures being shown in the financial statements.

13. Correcting Entries.

When an error of omission has been ascertained, the transaction is recorded as it should have been in the first instance.

The location of an error of commission requires a correcting entry made in the general journal to adjust the accounts affected. The following entries illustrate some correcting entries:

a. The Wrong Amount Recorded and Posted.

A sale of \$50 was made to J. P. Conley on account. It was entered in the sales journal as \$150 and so posted. The entry to correct is as follows:

Sales.....	\$100
J. P. Conley.....	\$100

b. Posting to the Wrong Account.

A debit of \$750 for salaries paid to salesmen was posted from the cash disbursements book as a debit to the Salesmen's Traveling Expenses account instead of the Salesmen's Salaries account. The entry to correct is as follows:

Salesmen's Salaries.....	\$750
Salesmen's Traveling Expenses.....	\$750

c. Error of Principle.

An error of principle refers to the confusion between capital and operating accounts. An expenditure of \$67.98 for repairs to machinery was charged to the Machinery account. This expenditure represents a maintenance charge, and should be debited to an operating account, Repairs to Machinery. The entry to correct is as follows:

Repairs to Machinery.....	\$ 67.98
Machinery.....	\$ 67.98

d. Compensating Errors.

A compensating error results when two errors involving exactly the same amount occur in posting, one offsetting the other. An illustration of this would be the omission of a credit of \$100, from one entry, and a debit of \$100 from another entry. No correcting entry is necessary for this type of error, since the total debits and credits are affected in the same amount. An error of omission is also involved when a compensating error takes place. If the facts become known, the omitted debit and credit amount must be posted.

Questions

1. What is the function of the ledger?
2. Explain what is meant by the term "posting."
3. Differentiate between current and summary postings.
4. What is the necessity for making current postings?
5. What is meant by making a "cross-reference" in posting? It serves what purpose?

6. What are the current and summary postings made from the:
 - a. Cash receipts journal?
 - b. Cash disbursements journal?
 - c. Purchases journal?
 - d. Sales journal?
7. What is the nature of the postings made from the general journal?
8. What certain type of accounts may show no balance at the end of an accounting period, although many debit and credit postings have been made to these accounts during the period?
9. The accounts with debit balances at the close of any accounting period represent what general groups of accounts?
10. Accounts with credit balances at the close of any accounting period represent what general groups of accounts?
11. What facts determine whether the owner's Personal account has a debit or a credit balance?
12. Define a trial balance.
13. When is a trial balance prepared?
14. Enumerate the steps in the procedure of taking off a trial balance.
15. What are the purposes of the trial balance? Which is the more important and why?
16. Enumerate the reasons why a trial balance may not balance.
17. What type of errors may be made which will not prevent the trial balance from balancing?
18. What is a correcting entry?

CHAPTER VI

PREPARATION OF THE WORK SHEET

1. Description of the Work Sheet.

A work sheet may be defined as a summary of all the recorded transactions for the accounting period, together with all other unrecorded data applicable to the same period. The recorded transactions are in the form of a trial balance. The unrecorded data are ascertained by:

1. Taking a physical inventory if a perpetual inventory is not a part of the accounting system.
2. Computing the amount of prepaid expenses and prepaid income applicable to the present period.
3. Calculating the accrued expenses and accrued income items applicable to the present period.
4. Estimating the amount of depreciation on capital assets applicable to the present period.
5. Estimating the amount of customers' accounts which will prove to be uncollectible, arising from sales made in the accounting period just closing.
6. Estimating certain operating expenditures and setting up reserves for them.

Description of the last four classes of unrecorded data is carried on in the next three chapters. The method of handling the inventory at the close of the accounting period has already been mentioned in Chap. III, in connection with the preparation of plant-operating statements, the statement of income, profit and loss, and the balance sheet. The necessity for its inclusion in the work sheet is described in this chapter.

The recorded transactions in trial balance form and the unrecorded data are set up on columnar analysis paper which forms the work sheet.

2. Form of the Work Sheet.

The simplest form of the work sheet requires six money columns, with additional space for the names of the accounts.

A more common form is the eight-column work sheet, providing an "adjustments" column, as illustrated below:

FORM 24.—EIGHT-COLUMN WORK SHEET

Account	Trial Balance		Adjustments		Profit and Loss		Balance Sheet	
	Dr.	Cr.	Dr.	Cr.	Dr.	Cr.	Dr.	Cr.

From the above form, the work sheet may be expanded to provide for departmental plant analysis. A fourteen-column work sheet is described in Chap. XXIV.

3. Purpose of the Work Sheet.

The work sheet is a supplementary aid to the regular accounting books and is used in the preparation of the operating and financial statements. The work sheet provides a convenient method of summarization of all the results of the accounting period on a single sheet. The purpose of the work sheet is to ascertain the net profit or net loss figure and verify its accuracy preliminary to the preparation of the formal financial statements and closing the operating accounts in the ledger.

The use of the work sheet by the accountant and engineer is optional and not imperative. Net profit or net loss may be obtained by any of the following methods:

1. Preparation of financial statements from account balances taken directly from the accounts.
2. Preparation of financial statements from the trial balance without setting up a work sheet.
3. Closing the operating accounts in the ledger through a Profit and Loss account (see Chap. XI).
4. Comparing the Ownership account at the close of two consecutive accounting periods.

After the preparation of the work sheet is once understood, however, it becomes a regular fixture used at the close of each accounting period. In a concern having a large number of accounts and many adjustments, the work sheet is of indis-

pensable value. Every type of adjustment, mentioned in Sec. 1 of this chapter, is reflected in both the statement of income, profit and loss, and the balance sheet. Overlooking some adjustment frequently occurs when a work sheet is not used. Therefore, several advantages are available with the use of a work sheet.

4. Advantages of the Work Sheet.

The following advantages are found to exist in making use of the work sheet:

1. Proof of the mechanical accuracy and dispatch in arriving at the net profit or net loss.
2. After the completion of the work sheet, it furnishes the detailed information for the preparation of the:
 - a. Financial and operating statements.
 - b. Adjusting journal entries.
 - c. Closing journal entries.

In summarizing the above information, the work sheet may be called the accountant's master sheet.

5. Steps in the Preparation of the Work Sheet.

There are five steps involved in the preparation of the work sheet. They are as follows:

1. Enter the trial balance on the work sheet.
2. Enter the adjustments in the adjustment column.
3. Incorporate the adjusting data applicable to the accounts in the trial balance.
4. Distribute all operating account figures to the columns labeled profit and loss.
5. Distribute all capital account figures to columns labeled balance sheet.

A work sheet prepared from the ledger of H. J. Finley, shown in Chap. V, follows on page 83.

6. The Theory upon Which the Work Sheet Is Based.

Although the work sheet is not an integral part of the accounting system, the principle of debit and credit underlies its preparation. This is first evident when the trial balance is copied in the first two money columns. Each division of the work sheet labeled "adjustments," "profit and loss,"

FORM 25
H. J. FINLEY
WORK SHEET
February 28, 19—

PREPARATION OF THE WORK SHEET

83

	Trial Balance		Adjustments		Profit and Loss		Balance Sheet	
	Dr.	Cr.	Dr.	Cr.	Dr. (Expense)	Cr. (Income)	Dr. (Assets)	Cr. (Equities)
Cash.....	\$ 6,371 50						\$ 6,371 50	
Johnson & Dale.....	166 60						166 60	
C. C. Sullivan.....	21 17						21 17	
C. R. Moxey.....	2 29						2 29	
Morey & Fox.....	76 38						76 38	
J. H. Hayward.....	153 71						153 71	
Newlin & Ross.....	421 10						421 10	
Furniture and Fixtures.....	225 00						225 00	
Best Paper Corporation.....		\$ 477 00						\$ 477 00
Standard Tool Company.....		1,943 50						1,943 50
H. J. Finley, Capital.....		10,000 00						10,000 00
H. J. Finley, Personal.....	510 00						510 00	
Sales.....		3,412 25			\$ 25 00	\$ 3,412 25		
Sales Returns and Allowances.....					7,587 50			
Purchases.....	25 00							
Purchases Returns and Allowances.....	7,587 50					500 00		
Store Salaries.....	400 00				400 00			
Rent.....	250 00				250 00			
Store Expense.....	22 00				22 00			
Office Expense.....	14 00				14 00			
Office Salaries.....	80 00				80 00			
Interest Expense.....	7 50				7 50			
Purchase Discount.....		3 00				3 00		
	\$16,335 75	\$16,335 75						
Inventory, Feb. 28, 19—.....			\$6,450 08					
Net Profit.....					1,979 33	\$ 6,450 08	6,450 08	1,979 33
			\$6,450 08		\$10,365 33	\$10,365 33	\$14,399 83	\$14,399 83

and "balance sheet" is divided into two columns, namely, debit and credit.

Every adjustment is composed of both a debit and a credit. When all adjustments are entered, the total of the debit column must be equal to the total of the credit column.

Expense accounts appearing on the debit side of the trial balance column, whether or not affected by adjustments, are carried to the debit side of the profit and loss column. A decrease of income, such as sales returns and allowances, is handled in the same manner.

Income accounts shown on the credit side of the trial balance column, affected or not by adjustments, are carried to the credit side of the profit and loss column. A decrease of expense is handled likewise.

The asset accounts also appearing on the debit side of the trial balance column, changed or unchanged by adjustments, are transferred to the debit side of the balance sheet column. The owner's Personal account showing a debit balance is likewise transferred to the debit side of the balance sheet column, representing a decrease in ownership.

The liability accounts and the owner's capital account are transferred from the credit side of the trial balance column, whether or not increased or decreased by any adjustments, to the credit side of the balance sheet column.

Extreme care must be used in making the distribution of the amounts from the trial balance column and adjustments column. It is of greatest importance to be familiar with the classification of accounts and to possess the ability to differentiate between operating and capital accounts. The penalty for being unable to differentiate between a capital and an operating account spells misstatement of the net profit or net loss figure. And proper managerial control cannot be exercised when financial statements are prepared with erroneous figures.

7. The New Inventory in the Work Sheet.

Following the accounts named in the trial balance column is written the word "Inventory" together with the date of closing. The amount is shown both as a debit and a credit in the adjustment column on the same line opposite the account caption. The debit amount is distributed from the adjustment

column to the debit column of the balance sheet column. It is shown as an asset, because it represents the value of goods on hand at the close of the accounting period. It represents the cost of goods purchased which have not been sold.

The amount of the new inventory, as a credit in the adjustment column, is transferred to the credit side of the profit and loss column. By so doing, it acts as a decrease of expense. It must be remembered that the cost of goods sold is an expense as well as are the various selling, administrative, and financial costs. The cost of goods *available* for sale is composed of three items, namely:

(Old) Inventory (at beginning of period).....	\$ 6,000
Net Purchases.....	23,589
Freight in on Purchases.....	350
<i>Cost of Goods Available for Sale</i>	<u>\$29,939</u>

To arrive at the cost of goods *sold*, the cost of the unsold goods (the new inventory) must be subtracted from the total cost of goods *available for sale*.

<i>Cost of Goods Available for Sale</i>	\$29,939
(New) Inventory (at close of period).....	3,850
<i>Cost of Goods Sold</i>	<u>\$26,089</u>

In the work sheet, the old inventory, purchases, and freight in are shown as expenses in the profit and loss debit column. By placing the new inventory in the credit column, it acts as a subtraction, thereby reflecting the cost of goods sold in the net profit or net loss. Briefly, the new inventory, as a credit in the profit and loss column, prevents the cost of goods sold from being overstated.

8. Summarizing the Work Sheet.

After all adjustments have been entered in the adjustment column and it is balanced; after all trial balance amounts, adjusted or unadjusted, have been transferred to the proper columns; and after all adjustments not affecting the trial balance accounts have been distributed, then the debit and credit columns are totaled under the headings of "profit and loss" and "balance sheet."

9. Balancing the Profit and Loss Columns.

The debit and credit profit and loss columns will invariably differ in total amount. A credit total in excess of a debit total means income has been greater than the expense for the period, consequently, a net profit is the result. The amount of the net profit is then entered in the debit column to balance with the credit column.

A debit total greater than a credit total signifies that a greater amount of expense has been incurred than the amount of income earned, resulting in a net loss. Such being the case, the net loss is entered in the credit column to balance the debit column.

10. Balancing the Balance Sheet Columns.

If the balance sheet debit column is greater than the credit total, obviously, the asset values are greater than the sum of the liabilities plus the ownership. The difference represents an increase of ownership as a result of a net profit having been made. The net profit figure already entered in the profit and loss debit column is now entered in the balance sheet credit column to balance that column (refer to illustration on p. 83).

A balance sheet credit column showing a total greater than the debit column total signifies that the rights to the assets are greater than the value of the assets. Consequently, the ownership equity must be decreased. And the amount by which it is decreased is the amount of the net loss shown in the profit and loss credit column (see illustration on p. 87).

11. The Completed Work Sheet.

With the net profit or net loss figure added to the balance sheet columns the mechanical accuracy is proved. It does not necessarily mean that it is the *accurate* profit or loss. Some operating account may have been confused with a capital account during the process of preparing the work sheet. Such an error would not prevent obtaining a balanced work sheet, but it would mean an inaccurate net profit or net loss figure.

The completed work sheet now provides all the necessary figures from which are prepared:

FORM 26

T. D. COLLINS

WORK SHEET

June 30, 19—

PREPARATION OF THE WORK SHEET

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	Trial Balance		Adjustments		Profit and Loss		Balance Sheet	
	Dr.	Cr.	Dr.	Cr.	(Expense) Dr.	(Income) Cr.	(Assets) Dr.	(Equities) Cr.
Cash.....	\$ 1,100						\$ 1,100	
Notes Receivable.....	250						250	
Accounts Receivable.....	10,851						10,851	
Inventory, Jan. 1, 19—	6,000				\$ 6,000			
Land.....	4,000						4,000	
Buildings.....	13,000						13,000	
Furniture and Fixtures.....	1,820						1,820	
Accounts Payable.....		\$ 3,500						\$ 3,500
T. D. Collins, Capital.....		30,000						30,000
T. D. Collins, Personal.....		1,500						1,500
Sales.....		35,000				\$35,000		
Sales Returns and Allowances.....	350				350			
Purchases.....	24,000				24,000			
Purchases Returns and Allowances.....		411				411		
Freight In.....	350				350			
Salaries and Wages.....	6,525				6,525			
Delivery Expense.....	1,300				1,300			
Freight Out.....	165				165			
Repairs to Buildings.....	733				733			
Commissions Earned.....		350				350		
Interest on Bank Deposits.....		49				49		
Sales Discount.....	366				366			
	\$70,810	\$70,810						
Inventory, June 30, 19—			\$ 3,850	\$3,850		3,850	3,850	
Net Loss.....						129	129	
			\$3,850	\$3,850	\$39,789	\$39,789	\$35,000	\$35,000

1. Financial Statements:

- a. Statement of income, profit and loss.
- b. Statement of ownership.
- c. Balance sheet.

2. Journal entries to close the operating accounts in the ledger:

- a. Adjusting journal entries.
- b. Closing journal entries.

The preparation of financial statements and adjusting and closing entries are taken up in detail in Chaps. X and XI.

Questions

1. Define a work sheet.
2. What is meant by "unrecorded" transactions?
3. Why is the new inventory considered as an unrecorded item at the end of any accounting period (except the perpetual inventory)?
4. What is the form of the work sheet?
5. State the purpose of the work sheet.
6. Enumerate the advantages of the work sheet.
7. Describe the steps involved in the preparation of the work sheet.
8. In what manner does the principle of debit and credit enter into the preparation of the work sheet?
9. What amounts are transferred from the trial balance debit column to the profit and loss debit column? To the balance sheet debit column?
10. What amounts are transferred from the trial balance credit column to the profit and loss credit column? To the balance sheet credit column?
11. The amount in the trial balance representing the balance in the owner's Personal account is transferred to what other column in the work sheet?
12. What would be the effect of placing an expense amount in the balance sheet debit column?
13. What would be the effect of placing a liability amount in the profit and loss credit column?
14. Explain why the new inventory as an adjustment is transferred to the profit and loss credit column and to the balance sheet debit column.
15. What adjusting journal entry is necessary to reflect in the ledger accounts the new inventory value as shown in the work sheet?
16. How can you ascertain from the work sheet that a profit has been made? A loss?
17. If the balance in the profit and loss columns denotes a profit, in what other column must the profit also appear?
18. If the balance in the profit and loss columns indicates a loss, in what other column must the loss also be shown?

19. If each pair of columns in the work sheet show the same totals, is it proof that the net profit or net loss is accurate?

20. After the work sheet is completed, what use is made of the amounts appearing in the:

- a. Adjustment columns?
- b. Profit and loss columns?
- c. Balance sheet columns?

CHAPTER VII

ACCRUALS AND PREPAYMENTS

1. Adjustments at the Close of the Accounting Period.

The reasons for considering the new inventory as an adjustment at the close of each accounting period have been described. Certain other accounts also require adjustment at the close of each accounting period. The necessity for adjustment arises from the effort to obtain, as closely as possible, an accurate net profit or net loss figure.

Other adjustments to be considered are as follows:

1. Accrued expense.
2. Accrued income.
3. Prepaid expense.
4. Prepaid income.
5. Depreciation.
6. Reserves.

The first four adjustments are described in this chapter. The treatment of depreciation and reserves is left to later chapters.

2. The Cash versus the Accrual Basis.

Net income may be computed upon the cash or accrual basis. That is to say, that the books of account are kept upon one or the other of these plans. The cash basis of account keeping considers the actual cash received as the income for the period, and as expenses only the amount of cash disbursed. The accrual basis considers all earnings as income, whether the receipt of cash is immediate or deferred; and all expenses are recorded as soon as incurred even though payment may be deferred.

Business concerns engaged in trading or manufacturing have been required, since the advent of the Federal Income Tax laws,¹ to operate their accounting systems on an accrual basis, if inventories are a material income producing factor in the production, purchase, or sale of merchandise of any

¹1928 Act, Regulations 74, Art. 323.

kind. The accrual basis is briefly contrasted with the cash basis in the following table:

Accrual basis	Cash basis
1. Income for the period includes both cash and credit sales, as well as any other source of earnings applicable to the period, whether or not the cash is received in the present or future periods.	Income for the period is considered only as cash receipts from sales and other income sources of the period.
2. Inventories at the beginning and at the close of the accounting period are used to ascertain accurately the cost of goods sold, which affects net profit or net loss.	Inventories are not considered in arriving at the net profit or net loss for the period.
3. Accrued expense and accrued income items are recorded on the books prior to arriving at the net profit or the net loss for the period.	Accruals are not considered.
4. Amounts of expense paid or income received, any portion of which is not applicable to the present period, are deferred to subsequent periods.	Adjustments for items of prepaid expense and prepaid income are not considered.

The accrual basis will cause the net profit or net loss for the period to be shown accurately, while the cash method is misleading and, obviously, its use must be discouraged.

3. Accruals.

Accruals are items of expense or income, *unrecorded* prior to the close of the accounting period, which must be recorded in order to show the full amount of expense or income applicable to the period.

4. Accrued Expense.

An accrued expense is an item of expense applicable to, but unrecorded at the close of, the accounting period.

Some examples of accrued expenses are:

- a. Wages, salaries, and commissions due but unpaid.
- b. Liability for taxes unpaid.
- c. Unpaid interest accumulated on notes, bonds, and mortgages payable.
- d. Unpaid water rent, power expense, and royalties.

A business may have received the services from its employees, yet not have paid them at the close of the accounting

period. Tax, interest, and royalty expenses may have accumulated during the fiscal period, hence, are proper charges to the period even though unpaid. To ignore such items of expense would be to understate the expenses for the accounting period, as well as to understate the liabilities. The preparation of accurate financial statements requires adjustments for these items and other similar ones.

For the purpose of illustration assume that services amounting to \$237.41 have been performed by the employees of a plant for the week ended Dec. 31, 19—. This date also coincides with the close of the fiscal year. The custom of the plant is to pay every two weeks. Hence, the next pay day will be on Jan. 7 of the following year. The services rendered in terms of dollars and cents are an expense for the year ended Dec. 31, 19—. Since the employees will not be paid until the week following, an adjusting entry is necessary to record this expense. The proper entry in the general journal is as follows:

General Journal

19—									
Dec. 31	Wages					\$237 41			
	Wages Payable								
	or								
	Accrued Wages							\$237 41	
	To charge the period with the expense of wages from Dec. 24, to Dec. 31, and to set up liability for the payment of same								

The ledger accounts affected by the adjusting entry are shown below:

Wages

19—									
Oct. 1	Cash	\$	567 89						
	15 "		756 65						
	29 "		842 20						
Nov. 12	"		847 10						
	26 "		798 67						
Dec. 10	"		765 22						
	24 "		920 20						
	31 Accrued		237 41						
			\$5,735 34						

Accrued Wages

						19— Dec. 31	Accrued			\$237 41
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After the adjusting entry has been posted, the expense account, Wages, reflects the total cost for wages for the period ended Dec. 31, 19—. The total wages paid in cash plus the accrued wages are shown as an expense in the income, profit and loss statement. The amount of \$237.41, shown in the Wages Payable account is shown in the balance sheet under the caption of "current liabilities," and under the subcaption of "accruals payable."

If the payroll at Jan. 7, 19—, amounted to \$736.09, at this date of payment, the following entry would be made:

Cash Disbursements Journal

19— Jan.	7	Accrued Wages Wages Cash (Cr.)	Wages for two weeks' period ended Jan. 7, 19—	\$237 41 498 68			\$736 09
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Thus, the liability for wages due at Dec. 31, 19— is cancelled, and the services rendered for the first week in the next accounting period are recorded as an expense.

5. Accrued Income.

Accrued income is income applicable to the accounting period but unrecorded at the close of period.

Some examples of accrued income are as follows:

- Interest accumulated on notes receivable and investments but not received.
- Commissions earned by the business but not collected.
- Rentals due the business but uncollected.

To ignore such items would understate the income and the assets of the business for the accounting period, and consequently misstate the net profit and ownership in the financial statements.

An example of accrued income may be seen in the following illustration: A note for 90 days with interest at 6 per cent,

due within 30 days, is shown in the balance sheet under the current asset group.

At Jan. 30, 19—, when the note matures, the interest received will be recorded as follows:

Cash Receipts Journal

19—									
Jan.	30	Interest Receivable	Interest received on	\$5 00					
		Interest Earned	90-day, 6% \$500	2 50					
		Cash (Dr.)	note dated Nov. 1,					\$7 50	
			19—						

The income applicable to the accounting period after Dec. 31, 19—, is \$2.50, and is so recorded in the above entry.

6. Prepayments.

A prepayment is an item of expense or income, which has been *recorded on the books* prior to the close of the accounting period, a portion of which is to be considered as expense or income in the following period or periods.

If an item of expense is paid for in advance for a period of 3 years, obviously, the only equitable basis for charging the expense against operations would be to spread it over a period of 3 years. No one of the 3 years, then, would be burdened with an undue proportion of expense from the particular item. Similarly, income should be prorated when received in advance, and when it is applicable to more than one accounting period.

7. Prepaid Expense.

Prepaid expense is an expenditure recorded in the books prior to the close of the accounting period, a portion of which should be charged against a following accounting period or periods.

It is unnecessary to charge expense items to prepaid expense accounts, if they are entirely utilized within the same accounting period the expenditures are incurred. In such cases, the expense account itself should be charged.

Some accounts which record items of prepaid expense are as follows:

- a. Prepaid Insurance.
- b. Prepaid Advertising.
- c. Prepaid Discount.
- d. Supplies Inventory.

As an illustration of a prepaid expense, a policy for fire insurance on a building was purchased Jan. 1, 19—, covering a period of 3 years. A premium of \$600 was paid in advance.

The entry to record the expenditure should be as follows:

Cash Disbursements Journal

19— Jan.	1	Prepaid Insurance Cash (Cr.)	Insurance premium on building for 3 years to Dec. 31, 19—	\$600 00			\$600 00
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The entry to *adjust* the Prepaid Insurance account at the close of the first accounting period, Dec. 31, 19—, should be as follows:

General Journal

19— Dec. 31		Insurance Prepaid Insurance		\$200 00			\$200 00
		To charge operations with the pro- portion of prepaid insurance appli- cable to the fiscal year 19—.					

Prepaid Insurance

19— Jan.	1	Cash	\$600 00	19— Dec. 31	To Insurance	\$200 00
				" 31	Balance	400 00
			\$600 00			\$600 00
19— Jan.	1	Balance	\$400 00			

The *adjusting* entry at the close of the accounting period, provided that one-half of the literature was still on hand, would be as follows:

General Journal

19—									
Dec.	31	Prepaid Advertising				\$337	50		
		Advertising						\$337	50
		To record the cost of unused advertising literature deferred to the next accounting period							

The debit balance in the expense account, Advertising, is thus reduced to \$337.50, the advertising cost for the year. In setting up the new account, Prepaid Advertising, an amount of \$337.50 is treated as an unused expense item at Dec. 31, 19—. The prepaid amount is shown in the balance sheet as previously described.

8. Prepaid Income.

Prepaid income is a receipt recorded in the ledger prior to the close of the accounting period, a portion of which should be credited to a subsequent accounting period or periods.

It is unnecessary to credit a prepaid income account if the income is earned entirely within the period it is received. The receipt of such income should be credited directly to an income account.

Adjustments for items of prepaid income generally do not occur as frequently as in the case of prepaid expense. Some of the accounts recording prepaid income, which require adjustment at the close of the accounting period, are as follows:

- a. Prepaid Rentals Received.
- b. Prepaid Subscriptions Received.
- c. Prepaid Interest and Discount.

In illustrating the entries pertaining to prepaid income, the basement of a building which was occupied by a machine shop was rented for storage purposes on Oct. 15, 19—. A rental of \$100 monthly was received in advance.

The entry to record the receipt of cash for the monthly rental on Dec. 15 would be as follows:

Cash Receipts Journal

19— Dec. 15	Prepaid Rentals Received Cash (Dr.)	Basement rent for month ended Jan. 15, 19—	\$100 00						
								\$100 00	

If the accounting period ended at Dec. 31, 19—, then the entire amount of \$300 received up to Dec. 15, 19—, has not been earned at Dec. 31, 19—. Of the total \$300 received, \$50 is unearned at the close of the accounting period. The adjusting entry is as follows:

General Journal

19— Dec. 31	Prepaid Rentals Received Rental Income		\$250 00					\$250 00	
	To credit income with the proportion of prepaid rentals applicable to the fiscal year 19—								

The ledger accounts illustrating the transactions are as follows:

Prepaid Rentals Received

19— Dec. 31	To Rentals Earned	\$250 00	19— Oct. 15	Cash		\$100 00			
31	To balance	50 00	Nov. 15	"		100 00			
			Dec. 15	"		100 00			
		<u>\$300 00</u>				<u>\$300 00</u>			
			19— Jan. 1	Balance		\$ 50 00			

Rentals Earned

			19— Dec. 31	From Prepaid Rentals Received		\$250 00			
--	--	--	----------------	----------------------------------	--	----------	--	--	--

As a result of posting the adjusting entry the income from rentals for the year ended Dec. 31, 19—, is shown in the amount of \$250. This earning appears in the statement of income, profit and loss. The posting also causes the Prepaid Rentals Received account to show a credit balance of \$50. This balance appears in the balance sheet under the heading of "deferred credits to operation." The balance represents unearned income for the fiscal year ended Dec. 31, 19—. The \$50 is said to be deferred or to be held over until the next fiscal period when it will be considered then as an earning.

Both the income, profit and loss statement and the balance sheet will contain a misstatement of fact if prepaid income items are not properly adjusted at the close of each accounting period: the former statement, in that income will be overstated; the latter, in that liabilities will be understated and ownership overstated.

The method just described for handling prepaid income and its adjustment is in strict keeping with good accounting practice. An alternative method is sometimes used, whereby the income account is used to record the current receipts. The monthly entries under such method would be as follows:

Cash Receipts Journal

19—									
Dec.	15	Rentals Earned	Basement rent for	\$100 00					
		Cash (Dr.)	month ended Jan.					\$100 00	
			15, 19—						

The adjusting entry necessary to defer the unearned portion of this rental in the present accounting period to the following period would be as follows:

General Journal

19—									
Dec.	31	Rentals Earned		\$50 00					
		Prepaid Rentals Received						\$50 00	
		To defer the proportion of rentals received in advance applicable to the following period							

By this method, the credit balance remaining in the income account, after posting the adjusting entry, represents the total income earned for the period. The \$50 set up in the Prepaid Rentals Received account represents the income deferred until the next period. Since the amount in the prepaid account is an earning in the first month of the following period, an entry should be made during January to record this fact. This entry would be as follows:

General Journal

19—									
Jan.	15	Prepaid Rentals Received				\$50	00		
		Rentals Earned						\$50	00
		To return the deferred income at the close of the last fiscal period to earned income for present period							

9. Prepayments and Accruals in the Work Sheet.

When there are prepayments and accruals to consider at the close of an accounting period, it is important to know how to make the proper adjustments in the work sheet. The adjustments are entered in the adjustment column opposite the account in the trial balance requiring adjustment. A new account must be set up below the trial balance accounts, if there is no account in the trial balance against which the adjustment can be made.

Illustration.—At the close of the 6-month period, June 30, 19—, it was necessary to consider the following adjustments:

a. Inventory of merchandise on hand.....	\$2,650.00
b. Insurance unexpired (prepaid expense).....	160.00
c. Office stationery and supplies unused (prepaid expense).....	40.00
d. Prepaid rentals received applicable to the next accounting period (prepaid income)	35.00
e. Estimated state sales tax (accrued expense)	16.76
f. Wages due but unpaid (accrued expense)..	75.00
Commissions earned but not received (accrued income).....	19.50

FORM 27
WORK SHEET
C. R. KOHOE
June 30, 19—

	Trial Balance		Adjustments		Profit and Loss		Balance Sheet	
Cash.....	\$ 400 00						\$ 400 00	
Notes Receivable.....	200 00						200 00	
Accounts Receivable.....	7,000 00						7,000 00	
Inventory, Jan. 1, 19—	2,300 00				\$ 2,300 00			
Furniture and Fixtures.....	500 00						500 00	\$ 1,500 00
Accounts Payable.....		\$ 1,500 00						8,580 00
C. R. Kohoe, Capital.....		8,580 00						
C. R. Kohoe, Personal.....								
Sales.....	400 00						400 00	
Prepaid Rentals Received.....		16,760 00				\$16,760 00		
Commissions Earned.....		840 00	(d) \$ 805 00	(g) \$ 19 50		519 50		35 00
Purchases.....	13,500 00							
Wages.....	2,340 00							
Rent.....	1,000 00		(f) 75 00		13,500 00			
Advertising.....	200 00				2,415 00			
Office Supplies.....	100 00				1,000 00			
Prepaid Insurance.....	240 00				200 00			
					60 00			
	\$28,180 00	\$28,180 00					160 00	
Inventory, June 30, 19—			(a) 2,650 00	(a) 2,650 00				
Insurance.....			(b) 80 00		80 00		2,650 00	
Office Supplies Inventory.....			(c) 40 00				40 00	
Rentals Earned.....				(d) 805 00		805 00		
Taxes.....			(e) 16 76		16 76			
Reserve for Taxes.....				(f) 16 76				16 76
Wages Accrued.....				(g) 19 50			19 50	75 00
Commissions Accrued.....								
				\$3,686 26				
Net Profit.....					1,162 74			1,162 74
					\$20,734 50		\$11,369 50	\$11,369 50

Questions

1. State the purpose of considering various types of adjustments at the close of each accounting period.

2. The argument is sometimes presented that the adjustments applicable to one accounting period approximately equal the adjustments pertaining to subsequent periods and therefore, all adjustments may be ignored. Comment upon this argument.

3. Describe the accrual basis for operating an accounting system.

4. In what respects does the accrual basis differ from the cash basis of keeping accounting records?

5. Define accrued expense. Give some illustrations of accounts affected by this type of adjustment.

6. How is an accrued expense item handled in the work sheet?

7. What adjusting journal entry is necessary properly to reflect an accrued expense adjustment in the ledger?

8. What is accrued income? Give several examples.

9. What columns in the work sheet are affected by an accrued income adjustment?

10. What adjusting journal entry is made for an accrued income item so that when posted the ledger accounts will be properly adjusted?

11. Define prepaid expense. Give several illustrations.

12. Under what account classification would a prepaid expense be placed?

13. State the manner in which an adjustment is made in the work sheet for a prepaid expense item. Also state what would be the adjusting journal entry.

14. If an *expense* account is charged with an expenditure which is applicable to more than one accounting period, what adjusting journal entry would be necessary to reflect the prepaid expense item?

15. Define prepaid income. Name some different accounts affected by such an adjustment.

16. State the manner in which an adjustment is made in the work sheet for a prepaid income item.

17. What adjusting journal entry is required to reflect the adjustment for prepaid income in the ledger?

18. If earnings are credited to an *income* account, a portion of which is applicable to a subsequent period or periods, what adjusting journal entry would be necessary to reflect the prepaid income?

19. What principle determines whether a prepaid expense account or only an expense account should be charged when an expenditure is made? Whether a prepaid income account or only an income account should be credited when earnings are recorded?

20. In what manner would the profit and loss statement and the balance sheet be affected in ignoring the following adjustments?

a. Accrued expense.

b. Accrued income.

c. Prepaid expense.

d. Prepaid income.

CHAPTER VIII

ACCOUNTING FOR DEPRECIATION AND DEPLETION

1. The Nature of Depreciation.

Depreciation is the constant diminution in the value of tangible fixed assets. Depreciation does not cease when operations are stilled, but continues steadily on without abatement. Little wonder, then, the effort exerted in industry to decrease plant idleness. Depreciation is frequently even more rapid with the non-use of equipment, because proper maintenance and repairs often are neglected.

The deterioration of equipment results from four major causes as follows:

- a. Use.
- b. Possession (non-use).
- c. New inventions.
- d. Style changes.

One authority on accounting has given the first two causes the name of physical depreciation; the last two the term "functional depreciation."¹ Diminution in the value of any piece of equipment goes with use and existence. The value of an asset subject to depreciation likewise is dependent upon its worth as an adequate productive agent. New inventions cause machines to become obsolete over night. Style changes frequently bring about the inadequacy of the equipment used in the production of goods. Obsolescence is thus a form of depreciation.

2. The Necessity for Considering Depreciation.

All outlays of cash, all expenditures, are, in the final analysis, expense items. Expenditures for wages, rent, power, supplies, etc., are immediate expenses. Expenditures for all types of equipment are capitalized and called assets, which means that the cost is a form of deferred expense. The cost of tangible fixed assets is spread over the period of their useful life. Each accounting period an adjusting entry is made, whereby a

¹ KESTER, R. B., "Accounting Theory and Practice," Vol. II, rev., Chap. XII, p. 231.

portion of the cost value of the asset is charged off as an operating expense. This periodic charge is termed depreciation. The periodic depreciation becomes a cost of operation, and is a fixed charge. By a fixed charge is meant the continued existence of an expense irrespective of whether the plant operates 24 hours a day, half time, or is standing idle.

There is another reason why it is imperative to provide for depreciation. By charging operations with depreciation and crediting a reserve for the same amount of depreciation, one provides against an impairment of capital invested in the tangible fixed assets. This principle may be seen in the following illustration.

A balance sheet is shown just after the owner engaged in business:

FORM 28
OTTO NELSON
BALANCE SHEET
Jan. 2, 19—

Assets		Liabilities and Ownership	
Cash.....	\$ 10,000.00	Accounts Payable...	\$ 10,000.00
Inventory Merchandise.....	50,000.00	Otto Nelson, Capital	100,000.00
Equipment.....	50,000.00		
	<u>\$110,000.00</u>		<u>\$110,000.00</u>

Consider the equipment to have an estimated useful life of 5 years. Each year depreciation amounting to \$10,000 should have been charged as an expense to operations. Actually, what transpired is shown in the following table:

Year	Depreciation charged off	Net profit or net loss	Withdrawals	Capital invested
Beginning first.....				\$100,000.00
End of first.....	None	\$30,000.00	\$25,000.00	\$105,000.00
End of second.....	None	20,000.00	15,000.00	110,000.00
End of third.....	None	10,000.00	10,000.00	110,000.00
End of fourth.....	None	(Loss) 10,000.00	10,000.00	90,000.00
End of fifth.....	None	15,000.00	15,000.00	90,000.00

At the end of 5 years the amount of the neglected depreciation is \$50,000, and the balance sheet at this time still shows an asset value of \$50,000 for the equipment. But an appraisal of the equipment shows that it has reached the scrap value stage, and that it should be replaced at once for economical production.

FORM 29
OTTO NELSON
BALANCE SHEET
Jan. 1, 19—

Assets		Liabilities and Ownership	
Cash.....	\$ 7,000.00	Accounts Payable...	\$ 14,000.00
Accounts Receivable.	19,000.00	Otto Nelson, Capital	90,000.00
Inventory, Merchandise.....	28,000.00		
Equipment.....	50,000.00		
	<u>\$104,000.00</u>		<u>\$104,000.00</u>

The balance sheet also shows that there is insufficient cash on hand to finance the replacement of the equipment. In neglecting to charge depreciation as an operating expense, net profits were overstated in the first three and the fifth years; net loss understated in the fourth year. This misstatement of the net profit and net loss figures each year created a false impression as to the financial welfare of the business. This in turn resulted in the withdrawal of invested capital instead of profits. The situation of Mr. Nelson's business is further aggravated by the fact that the equipment must be replaced. While it shows a book value of \$50,000, the actual value is scrap. Provision for the replacement of the depreciated assets has been neglected in withdrawing \$65,000 profits (shown as such) and \$10,000 capital originally invested. If depreciation had been properly considered, but \$15,000 would have been made during the 5-year period. The only way new equipment can be obtained to replace the worn-out units is to invest or borrow additional capital. A proper provision for depreciation would have prevented the necessity for obtaining a loan, or at least not as large an amount as is necessary.

3. The Factors of Depreciation.

Certain factors must be known before the rate of depreciation can be calculated. These factors are as follows:

- { Original cost.
- { Estimated useful life.
- { Scrap value.

Original cost means the invoice price less any discounts, plus all other expenses incident to placing the asset in condition for use. Such expenses include freight and cartage in, materials, and labor in setting up the asset, where necessary.

What the estimated useful life of an asset depends upon many other circumstances. The life of two identical machines in different plants may vary several years. Repairs and maintenance policy, more rapid deterioration due to plant idleness, hours worked each day, and the treatment received from the operators are factors causing the life of a machine to vary. Climatic conditions affect the life of assets exposed to the elements. Quality of roads and topography modify the life of delivery equipment.

Scrap value is the estimated value placed on the asset when it is purchased, as to the value it will bring after it has served its useful life. Scrap value is the selling price or trade-in-price of an asset less all costs of delivering it to the buyer.

Knowing the cost and estimating the useful life and scrap value permit a periodic depreciation rate and amount to be ascertained. Frequently, past experience will enable the engineer to arrive at the number of years of useful life and the scrap value with much accuracy, unless so-called functional depreciation becomes a factor. Customary rates on different types of assets subject to depreciation are frequently adopted by trade associations. The customary rate used by the trade or industry is usually the rate applied in accounting for depreciation, because such a rate usually receives the sanction of the Federal Income Tax authorities for use in preparing income tax returns.

There have been many ways devised to charge off depreciation. Whatever the method may be, the factors of cost, estimated life, and scrap value must be known.

4. The Problem of Depreciation.

Very few subjects in accounting can attract the attention of the engineer as can depreciation, because it is primarily a valuation problem. Depreciation is an ever-present problem confronting the engineer. It offers some of the most intricate and perplexing questions imaginable for practical and intelligent answers. Accounting for depreciation is relatively simple when the plan, rate, and policy have been worked out by the engineer. Every industry, every concern in a given industry, has its peculiar depreciation problems. In the present machine era, rapid inventions are challenging the engineer in regard to the best method of depreciating the obsolete and undepreciated cost of equipment.

5. Depreciation Methods in Practice.

a. Straight-line Method.

The most common method of charging off depreciation is called the "straight-line method." Innumerable concerns have adopted this method because of its simplicity. Net cost of the asset subject to depreciation is divided by the estimated life to give the periodic rate. The depreciation charge is uniform for each accounting period. The method derives its name from the depreciation line, which is straight when graphically plotted.

b. Production Method.

A gas company in the Pittsburgh district uses production as the basis for their depreciation charge in the production department. On production equipment 4 cents depreciation is charged off for each 10,000 cubic feet of gas produced. In the transportation department 3 cents depreciation is charged on capital equipment for each 10,000 cubic feet transported.

c. Gross Income Method.

Electric power corporations whose accounts are under surveillance of the State Public Service Commissions are required to set aside a certain percentage of gross income to provide for depreciation. The percentage figure is left to the discretion of the corporation officials.

d. Composite Life Method.

A manufacturer of plumbing supplies makes use of the composite life method as a basis for computing periodic depreciation charges. The method is used to ascertain the mean length of time necessary to depreciate completely the plant as a whole. The use of the composite method does not, however, eliminate the necessity for depreciation reserves for the various groups of assets dissimilar in nature. The method is as follows:

Assets	Cost value	Estimated life, years	Scrap value
Buildings.....	\$ 60,000	40	\$2,000
Machinery.....	100,000	10	4,000
Tools.....	4,000	4	200
	\$164,000		

Assets	Life, years	Value to depreciate	Rate of depreciation, per cent	Annual depreciation, straight line
Buildings.....	40	\$ 58,000	2½	\$ 1,450.00
Machinery.....	10	96,000	10	9,600.00
Tools.....	4	3,800	25	950.00
		\$157,800		\$12,000.00

$\$157,800 \div \$12,000 = 13.15$ years to depreciate the total plant, which represents the composite life.

e. Working Hour Method.

Some concerns make use of this method in connection with machinery and automobiles. When a new machine is acquired, the engineer will estimate the number of hours it will render productive service. The periodic depreciation charge is, then, computed on this basis. Daily records of the total working hours are maintained. The monthly depreciation charge is computed by using the monthly record of hours worked as the numerator and the total estimated

working hours as the denominator. The fraction so formed taken as a percentage of the total cost gives the depreciation charge. In the case of automobiles, the estimated total mileage becomes the basis for the periodic depreciation charge. An example clearly illustrates this method:

Total cost of machine to be depreciated, \$3,500

Estimated total service hours, 29,000

Actual service hours during the month, 360

$$\frac{360}{29,000} = 0.012413, \text{ or } 1.2413\%, \text{ the depreciation rate to be applied}$$

for the month.

$\$3,500 \times 1.2413\% = \43.45 , the monthly depreciation charge.

f. *The Fixed Percentage of Diminishing Value Method.*

This method is unlike the straight-line method in that a new base is used each year, to which a fixed rate is applied in order to ascertain the depreciation charge. Under this plan the yearly charge constantly decreases in amount. The depreciation charge is much higher in the first few years than in the later years of use. The strongest argument for this method is that the depreciation charge is decreased in later years when the repair charges are increasing. An attempt is thus made to equalize operating expenses. As a method it does not have a wide use and seems to be applicable to the automobile in a larger measure than to any other type of equipment.

Since a fixed percentage is applicable to a decreasing base, it is impossible ever to depreciate the full cost of an asset by this method. If a scrap value is estimated, a formula may be used to compute a rate, which applied will reduce the cost to the scrap value in a given length of time. An example is illustrated as follows:

Cost to be depreciated, \$1,000

Estimated useful life, 4 years

Estimated scrap value, \$25

The formula is as follows: $\text{Yearly rate} = 1 - \sqrt[n]{\frac{\text{scrap value}}{\text{cost}}}$

$$\text{Substituting: } 1 - \sqrt[4]{\frac{\$25}{\$1,000}} \text{ or } 1 - \sqrt[4]{0.025}$$

Extracting the fourth root with the use of logarithms:

$$\text{Log } 0.025 = -2.397940, \text{ or } 6.397940 - 8$$

$$6.397940 - 8 \div 4 = 1.599485 - 2, \text{ or } -1.599485$$

$$\text{Anti-log of } -1.599485 = 0.3976354$$

$$1 - 0.39763545 = 0.60236455 \text{ or the periodic depreciation rate of } 60.236\%$$

A table is illustrated below showing the yearly depreciation charge, which reduces the cost of \$1,000 to the estimated scrap value of \$25 in 4 years.

		Periodic charge	Accumulated depreciation
Original cost.....	\$1,000.00		
60.236 % of \$1,000.00.....	602.36	\$602.36	\$602.36
	\$ 397.64		
60.236 % of \$397.64.....	239.52	239.52	841.88
	\$ 158.12		
60.236 % of \$158.12.....	95.25	95.25	937.13
	\$ 62.87		
60.236 % of \$62.87.....	37.87	37.87	975.00
	\$ 25.00		

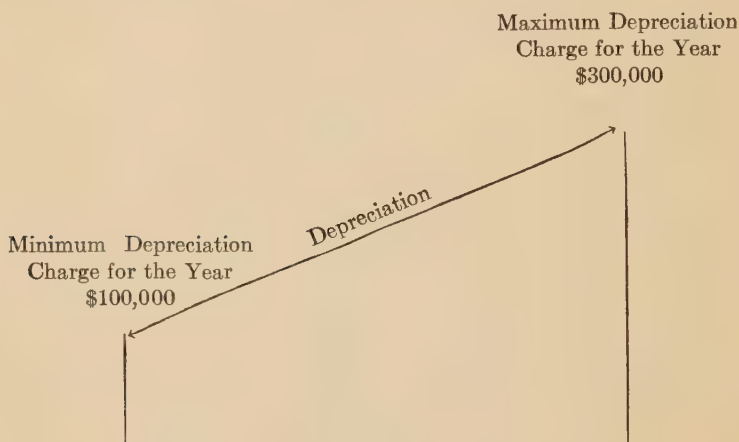
6. Other Methods of Estimating Depreciation Charges.

The above-described methods are probably the most common ones used. A few other methods, peculiar in nature, will be mentioned to illustrate how depreciation is taken care of in some industries.

The "guarantee plan" is a method found in use in the rock-crushing and the carpet-weaving industries. The machinery manufacturers guarantee that the machinery which they sell will have a life of so many years. Using this guarantee period as the estimated useful life, the per annum depreciation charge may be readily computed.

Another method, known as the "sliding-scale" method, is rather odd in its nature because it is so different from the plans described in the preceding section. It is usually found in use in large concerns where the fixed asset values subject to depreciation represent a large investment; for example, in the steel industry where hundreds of thousands or millions of dollars may represent the fixed asset investment. By this method, an attempt is made to adjust the periodic depreciation charges with the profits earned. It is not a method of

ignoring depreciation in years of lean profits and burdening the years in which large profits are earned with a heavy depreciation charge. Rather, it is a method of adjusting the depreciation charge within the lower and upper limits in terms of dollars and cents as calculated by the engineer and the accountant. After all the factors pertaining to depreciation are known, a sliding scale basis may be computed, as illustrated below:



The minimum charge may be based on the earning of no profit or upon a certain loss which may be incurred. For each \$1,000 profit or fraction thereof earned, a predetermined amount of depreciation is charged off, but in no year is the depreciation charge to be less than the minimum or to exceed the maximum.

7. Actual versus Theoretical Depreciation.

By actual depreciation is meant the difference between the cost of an asset and its present estimated value from an efficiency point of view. Actual value is determined by appraisal. Theoretical depreciation is the total amount of accumulated depreciation which has been charged off at the close of each accounting period. Theoretical depreciation is recorded on the books of account. Seldom, if ever, are theoretical and actual depreciation values the same at any time during the life of an asset.

Actual depreciation usually coincides with the efficiency of the asset. In many cases the efficiency of the asset is not materially reduced until more than 50 per cent of its estimated life has elapsed. Of course, efficiency is affected by repairs and maintenance policies.

Theoretical depreciation arises from the effort made to account for depreciation. Accounting for depreciation involves two steps; first, an estimation of the amount of the periodic charge by some arbitrary method best suited to the asset in question; second, recording the periodic charge on the books. Probably the best method to account for depreciation is to spread the cost of the asset uniformly over its estimated life.

It can easily be seen by the engineer that actual and theoretical depreciation will seldom be the same at any time during the useful life of the asset. At the termination of useful life, however, the two must be in agreement to account properly for complete depreciation of the asset on the books.

8. Obsolescence.

Obsolescence is a functional form of depreciation. The useful life of a tangible fixed asset comes to a premature end due to some external cause, and not because it is worn out or physically dead. It is most difficult to anticipate obsolescence, as a general rule. Usually it descends upon the asset like a thunderbolt. The scope of obsolescence is well illustrated by the following statement: "Depreciation from obsolescence and inadequacy may be actual, probable, possible, or improbable."¹

The engineer again finds that his services are requisitioned in passing judgment as to whether an asset is or is not obsolete. It is he who says whether the asset in use is superseded by another capable of greater production; whether a greater investment is warranted.

Obsolescence should not be charged off as an operating expense unless it has actually taken place, or there is some definite assurance that it will take place. Many concerns provide for obsolescence as an operating expense by making the annual depreciation rate higher than the amount estimated to take care of the physical depreciation. This point is

¹ SALIERS, E. A., "Depreciation Principles and Application," p. 22.

clearly elucidated by the 1928 Act, Federal Income Tax law, which reads as follows:

With respect to physical property the whole or part of which is clearly shown by the taxpayer as being affected by economic conditions that will result in its being abandoned at a future date prior to the end of its normal useful life, so that depreciation deductions alone are insufficient to return the cost . . . at the end of its economic term of usefulness, a reasonable deduction for obsolescence, in addition to depreciation, may be allowed . . . No deduction for obsolescence will be permitted merely because, in the opinion of a taxpayer, the property *may* become obsolete at some later date.¹

Anticipated obsolescence may be provided for in a corporation by creating a surplus reserve (see Chap. IX, Sec. 5). The occurrence of obsolescence not anticipated, and for which no reserve has been created, may be accounted for by one of the following plans:

a. Charging the undepreciated balance of the obsolete asset to surplus (in a corporation), or against capital.

b. Capitalizing the undepreciated balance to be amortized along with the depreciation of the new asset.

The former is probably the sounder plan from a conservative accounting point of view. The latter may be sanctioned by arguing that increased depreciation expense will be offset by greater utility embodied in the new asset, resulting in increased income. In any case a nice problem arises, which requires engineering experience, foresight, knowledge of accounting theory, and good common sense to prescribe the proper entries on the books.

9. Recording Depreciation.

Depreciation of tangible fixed assets has been described as an operating expense, which, at the close of each accounting period is another adjustment to consider.

Illustration.—A delivery truck costing \$1,036, purchased at Jan. 2, 19—, is estimated to have a useful life of 4 years. The annual rate of depreciation to be charged off would be 25 per cent. The adjusting entry to record the depreciation at the close of the first year would be as follows:

¹ U. S. Income Tax Regulations, 74, Art. 206.

General Journal

19— Dec. 31	Depreciation on Delivery Equipment	\$259 00	
	Reserve for Depreciation on Machinery		\$259 00
	To charge operations with depreci- ation applicable to the year 19—		

After posting the adjusting entries, the ledger accounts would appear as follows:

Depreciation on Delivery Equipment

19— Dec. 31	\$259 00								
----------------	----------	--	--	--	--	--	--	--	--

Reserve for Depreciation on Delivery Equipment

					19— Dec. 31			\$259 00	
--	--	--	--	--	----------------	--	--	----------	--

The debit of \$259 in the Depreciation account represents a 25 per cent portion of the cost of the truck chargeable as expense for the first year the truck has been in use. Depreciation appears as an expense in the income, profit and loss statement. The debit of \$259 in the Depreciation account is closed to the Profit and Loss account at the close of the accounting period (see Chap. XI). If depreciation was not considered, expenses would be understated and profits overstated. In crediting the Reserve for Depreciation on Delivery Equipment account, the asset values are prevented from being overstated on the books.

10. The Depreciation Reserve Account.

The Depreciation Reserve account remains an open account in the ledger until the asset is scrapped or disposed of through sale or exchange. At the close of each fiscal period, an additional credit is placed in the account until the cost of the asset is entirely depreciated. At the beginning of the fourth year the Reserve account in the preceding illustration would appear as follows:

Reserve for Depreciation on Delivery Equipment

					19—				
					Dec. 31			\$259	00
					19—				
					Dec. 31			259	00
					19—				
					Dec. 31			259	00

The balance in the reserve account, at the close of any accounting period, is shown in the balance sheet. The account balance represents the accumulated theoretical depreciation. The difference between the asset cost and the balance in the reserve account represents the net book value of the asset. The purpose of the reserve account is to carry the credits, representing depreciation charged off, rather than crediting the asset account itself for the periodic depreciation. From this point of view, depreciation reserve accounts may be termed supplementary asset accounts. Such reserve accounts are called "valuation reserves." No credit should be posted to the asset account carrying the cost value of a tangible fixed asset until the asset is sold, scrapped, or exchanged in part payment for a new unit. In this manner the original cost may always be compared with the accumulated depreciation to show the estimated book value of the asset.

On the balance sheet, the reserve for depreciation amount may appear in one of two ways. The various credit amounts in the different depreciation reserve accounts may be grouped under the general caption "reserve for depreciation" on the liability side, or subtracted from the total fixed assets. Common practice also shows the reserve amounts on the asset side deducted from the individual assets to which they are related (see Chap. X).

The number of valuation reserve accounts to be found in the ledger usually depends upon the variety of fixed tangible assets. Separate reserve accounts are usually opened for each different class of assets, such as machinery, buildings, delivery equipment, furniture and fixtures, etc. Some concerns, however, make use of only one depreciation reserve account, using it as a control account as described in Chaps. XIV and XXI.

11. Replacing the Depreciated Asset.

Accounting for the depreciated asset, which has served its useful life, is frequently more involved than accounting for the periodic depreciation. Several possibilities will be described.

Illustration.—A machine costing \$850 on Jan. 2, 19—, is estimated to have a useful life of 8 years, and a scrap value of \$50. The annual depreciation rate is, then, 12½ per cent, or \$100 per annum.

a. Useful Life Terminates in Accordance with the Pre-estimation.

The accounts at the end of 8 years would appear as follows:

Machinery									
19—									
Jan.	2			\$850	00				

Reserve for Depreciation on Machinery									
				19—					
				Dec. 31				\$100	00
				19—				100	00
				Dec. 31				100	00
				19—				100	00
				Dec. 31				100	00
				19—				100	00
				Dec. 31				100	00
				19—				100	00
				Dec. 31				100	00
				19—				100	00
				Dec. 31				100	00

The entries made at the time of the sale, 8 years after the purchase was made, are as follows:

Cash Receipts Journal									
19—									
Jan.	2	Machinery				✓	\$50	00	

General Journal

19—									
Jan.	2	Cash	✓	\$ 50 00					
		Reserve for Depreciation on Machinery		800 00					
		Machinery						\$850 00	
		To record the disposal of machinery purchased Jan. 2, 19—, which has been entirely depreciated and which brought \$50 scrap value							

In actual practice, the entry is usually not so simple. Other illustrations will verify this statement.

b. Useful Life Terminates before Asset Has Been Entirely Depreciated.

(1) *A loss incurred in disposal of the asset.*

At the end of 6 years the asset is disposed of for \$100 cash. The entry would be as follows:

General Journal

19—									
Jan.	2	Cash	✓	\$100 00					
		Reserve for Depreciation on Machinery		600 00					
		Loss on Sale of Assets (Capital)		150 00					
		Machinery						\$850 00	
		To record the disposal of a machine purchased Jan. 2, 19—, realizing \$100, cash and taking a loss on the undepreciated value							

Theoretically, the loss of \$150 should be charged against the Capital account of the owner, or the Surplus account in a corporation. The asset has lasted 6 years instead of 8 years; \$100 scrap value instead of \$50 was received. The correct rate then to apply in each of the 6 years the asset was depreciated, therefore, should have been $16\frac{2}{3}$ instead of $12\frac{1}{2}$ per cent per annum. In charging off depreciation at the rate of $12\frac{1}{2}$ per cent per annum, in view of the final disposition of the asset, the expense in each of the 6 years has been understated \$25. This means that in 6 years the profits have been overstated by a total of \$150. This misstatement of profits is reflected in the present Capital account; hence,

the necessity for the adjustment of the Ownership account. In practice, a Loss on Capital Asset account is charged rather than the Ownership account, taking up the entire loss in the year in which it is actually realized. This procedure is for the purpose of keeping within the Federal Income Tax requirements. By charging Capital, or the Ownership account, it implies that an adjustment of profits for prior years is being made. If this is done, it invalidates the income tax returns for each of the past six years.

(2) *A profit realized in disposal of the asset.*

At the end of 7 years the asset is sold for \$200. The entry to record the transaction would be as follows:

General Journal

19— Jan.	2	Cash	✓	\$200 00			
		Reserve for Depreciation on Machinery		700 00			
		Machinery				\$850 00	
		Gain on Sale of Capital Assets (Capital)					50 00
		To record the disposal of machine purchased Jan. 2, 19—, realizing \$200 cash					

c. Asset Still in Use after It Has Been Fully Depreciated on the Books.

Under such circumstances no effort is made to adjust the asset and reserve account, unless the original depreciation rate is found to have been grossly erroneous. Sometimes an appraisal of the asset by the engineer will disclose that the asset still has quite an extended future life. Theoretically, the correcting entry to reflect the newly appraised value would be as follows:

General Journal

19—		Reserve for Depreciation on Machinery		\$500 00			
		Owner's Capital				\$500 00	
		To adjust capital for misstated profits resulting from too high depreciation charges in the years 19—, etc.					

In practice, the balances in the asset and its valuation reserve accounts would remain unchanged. This is the practice in order to be in keeping with Federal Income Tax provisions. Adjusting capital for inaccurate depreciation charges in past periods results in adjusting profits of prior periods. This procedure requires the preparation of amended tax returns. Unless the amount involved represents a sizable one, an amended return is dispensed with and adjustment is made when disposal is made of the asset.

12. Appreciation.

Appreciation is exactly opposite in meaning to depreciation. Appreciation is the *increase* in the value of an asset due to chemical or aging processes and economic conditions. A sharp distinction must be drawn between appreciation arising from external conditions and that from internal conditions.

Appreciation arising from factors without the operations of the business is economic appreciation. The increase in land values or other real property due to the increase in the income-yielding capacity, is termed in economics, the unearned increment. A valuation problem naturally arises, which must be solved by the engineer. The valuation principles from an accounting point of view are considered in Chap. XIV. Suffice it to say at this point, that the amount of appreciation of property values does not constitute an earned profit unless the asset affected is sold.

Appreciation may arise from factors entirely within the business. Such appreciation must be accounted for as part of the operations. Appreciation is associated with inventory values. It is found to exist primarily in plants where the time element is necessary to produce the desired product. The conversion of raw materials into a finished product is not only a mechanical one, but may be a chemical one as well. Green timber must be kiln dried before it is useful in manufacturing. Cheese, vinegar, ginger ale, and other foodstuffs must experience a process of aging before they are turned out as finished goods. Tobacco must be seasoned to give it the peculiar flavor it must possess before being marketed. The economic principle of time utility during the process of production thus tends to increase the value of the goods. No specific accounting entries are necessary to record this change. The

transformation is an inventory problem reflected in the raw material, goods in process, and finished goods inventories described in Chaps. XVIII and XIX. No entry is made for the increase in value of the inventories due to chemical changes. The profit is reflected in the difference between the selling price and the cost of sales.

13. Depletion.

Depletion is the consumption of a fixed asset which cannot be replaced. Depletion takes place when a fixed asset value is converted into an inventory or a current asset value. Only certain types of assets are subject to depletion. In general the extractive industries are the only ones possessing assets subject to depletion. Coal, oil, gas, timber, quarries and ore are examples of fixed assets which are subject to depletion.

The capital investment in the deposit is considered as a fixed asset as long as the deposit remains unused. The engineer surveys the property and makes an estimate of the number of productive units contained in the deposit. This estimate is of tremendous importance because it forms the basis for the depletion charge on the books of account.

The following conditions illustrate the handling of depletion: The Black Diamond Coal Company was organized as a corporation to purchase 1,000 acres of coal land at \$140 an acre. Two thousand shares of common capital stock were authorized to be issued at a par value of \$100 a share. Capital stock in the amount of 1,400 shares was given in exchange for the land, and 600 shares were sold at par for cash. A tippie was built at a cost of \$10,000; a hoisting shed cost \$5,000; hoisting machinery \$6,000; cutting machines \$11,000; mine cars and track \$4,000; electrical equipment \$6,000; development expenses \$8,000. A value of \$40 an acre was placed on the surface land. Engineers estimated that the deposit held 250 tons to the acre. The entries to record the above transactions would be as follows:

General Journal

Unissued Common Capital Stock	\$200,000	
Common Capital Stock		\$200,000
To record the authorized capital stock granted by charter dated Sept. 1, 19—, issued by the Secretary of the Commonwealth of Pennsylvania		
Surface Land	40,000	
Coal Deposit	100,000	
Unissued Common Capital Stock		140,000
To record issue of 1,400 shares capital stock for 1,000 acres land at above value		

Cash Receipts Journal

Unissued Common Capital Stock	\$ 60,000	
Cash (Dr.)		\$ 60,000
To record issue of 600 shares capital stock at par value		

Cash Disbursements Journal

Tipple	To record purchase price and cost of assets and development preparatory to coal removal	\$ 10,000	
Hoisting Shed		5,000	
Hoisting Machinery		6,000	
Cutting Machine and Mine Cars		11,000	
Electrical Equipment		6,000	
Development Expenses		8,000	
Mine Cars and Track		4,000	
Cash (Cr.)			\$ 50,000

A balance sheet prepared before operations began is as follows:

FORM 30
BLACK DIAMOND COAL CO.
BALANCE SHEET
Jan. 1, 19—

Assets		Liabilities and Ownership	
<i>Current:</i>		<i>Ownership:</i>	
Cash	\$ 10,000	Common capital stock authorized and outstanding, 2,000 shares at \$100 par value.....	\$200,000
<i>Deferred Charge:</i>			
Development expenses.....	8,000		
<i>Fixed:</i>			
Tipple.....	\$ 10,000		
Hoisting shed.....	5,000		
Hoisting machine..	6,000		
Cutting machine..	11,000		
Mine cars.....	4,000		
Surface land.....	40,000		
Coal deposits.....	100,000		
Electrical equipment.....	6,000		
	<u>182,000</u>		
	<u>\$200,000</u>		<u>\$200,000</u>

The depletion charge per unit is computed by dividing the cost of the deposit by the total estimated units contained in the deposit. In the illustration, the total estimated deposit is 250,000 tons; the cost \$100,000; and the depletion cost per ton, 40 cents. By keeping a daily production record, the annual depletion charge is computed. If 50,000 tons were mined the first year, the depletion charge would be \$20,000, and would be recorded by the following entry:

General Journal

19—	Depletion, Coal Deposit	\$20,000	00		
	Reserve for Depletion of Coal Deposit			\$20,000	00
	To record the charge for depletion for the year ended Dec. 31, 19—				

The Reserve for Depletion account is a valuation reserve account. It is an account supplementary to the asset account, Coal Deposit. The difference between the balances in the

asset account and its valuation reserve account at any time gives the estimated value of the unremoved deposit. On the balance sheet the balance of the reserve account is deducted from the asset account to which it applies.

It is necessary to consider depletion in order to safeguard the invested capital in the asset subject to exhaustion. Depletion is an expense; a cost of production. It is comparable to the cost of merchandise purchased for resale, or to the cost of goods manufactured for sale.

Provision must be made to return the \$200,000 capital invested by the stockholders at the end of 5 years, assuming that the coal deposit is entirely exhausted at that time and no new field is to be exploited by the corporation. If depletion is not considered in the cost of sales, obviously, gross profits and net profit would be overstated with a resultant overstatement of capital or surplus. In such cases, the overstated profits might have been entirely distributed as dividends from "earnings." Thus, it would prevent the return of the original investment as such.

Production on the same basis in the 4 subsequent years would entirely deplete the coal deposit according to the original estimate. The relationship existing between depreciation and depletion may be seen in this connection. The fixed assets required to mine and remove the coal are subject to depreciation. The estimated life of the depreciative assets must be in accordance with the estimated time necessary to exhaust the coal deposit. The possibility of removal of the assets subject to depreciation to another location for use, of course, enters into consideration in fixing the per annum rate.

Questions

1. What is meant by "depreciation?"
2. What are the chief causes bringing about depreciation?
3. What is the necessity for considering depreciation?
4. Why is depreciation called a "fixed charge?"
5. What factors must be known in order to compute the periodic depreciation rate?
6. What is included in the original cost of a tangible fixed asset?
7. What different factors may cause the estimated useful life of fixed assets to vary?
8. What is meant by "scrap value" and of what significance is it?
9. Name some of the most common methods of computing depreciation.

10. Contrast theoretical and actual depreciation.
11. What is meant by the term "obsolescence?"
12. How may obsolescence be accounted for, if no provision has been made for same, yet it has become an actuality?
13. What adjustment is necessary in the work sheet to record depreciation?
14. What adjusting journal entry is made for depreciation?
15. Explain the purpose of the depreciation reserve account.
16. How is the reserve for depreciation shown in the balance sheet?
17. In case a fixed asset is disposed of before its cost is entirely depreciated, what are some of the problems of adjustment which may arise.
18. What is meant by appreciation?
19. Differentiate between the two different types of appreciation?
20. Define depletion.
21. Why is it necessary to consider depletion?
22. How are depletion charges computed?

CHAPTER IX

RESERVES AND FUNDS

1. The Meaning of Reserves.

The meaning of "reserve" is to keep back for the present time something for use in the future. The reserve for depreciation accounts, described in Chap. VIII, fulfils this definition. The credit in the depreciation reserve account withholds separately the accumulated depreciation amount applicable to the tangible fixed asset, instead of crediting the asset account itself. From the time the first credit is set up in such a reserve account until some disposal is made of the asset, it serves as a valuation account. Comparison of the cost value as a debit in the asset account with the accumulated depreciation as a credit in the reserve account gives the present estimated book value of the asset item.

Reserve account balances always represent estimates or book values. The idea of money is frequently associated with the reserve in the minds of those who are not familiar with accounting principles. A minute's thought regarding the nature of the balance found in the Cash account and in the reserve accounts, however, will dispel any idea of similarity. The Cash account is an asset appearing with a debit balance, while reserve accounts have, normally, only credit balances and there is no relation between the two.

2. Classification of Reserve Accounts.

Reserve accounts may be classified as valuation, operating, capital, and appraisal reserves. This fourfold classification of reserves is a general one. All four general groups may be still further subdivided. A more detailed outline is shown as follows:

A. Valuation Reserves.

1. Depreciation.
2. Depletion.
3. Uncollectible Accounts.

B. Operating Reserves.**1. Maintenance.***a.* Repairs.*b.* Breakage.*c.* Reconditioning.**2. Inventory Losses.****3. Liability.***a.* Taxes.*b.* Water and Power.*c.* Compensation Insurance.*d.* Federal Income Tax.**C. Capital or Surplus Reserves.****1. Plant Extension and Betterments.****2. Contingencies.****3. Funds.****D. Appraisal Reserves.****3. Valuation Reserves.****A. DEPRECIATION AND DEPLETION RESERVES.**

The necessity for depreciation and depletion reserve accounts was considered in Chap. VIII. Periodic depreciation and depletion charges to operations are offset by credits to the proper reserve accounts. Instead of crediting the asset account with the estimated depreciation or depletion, the reserve account is used to record this credit.

B. RESERVE FOR UNCOLLECTIBLE ACCOUNTS.

Another valuation reserve account to be found in the ledger of many concerns doing business on a credit basis is the Reserve for Uncollectible Accounts. One of the unwritten laws of business is that a certain loss from uncollectible accounts must be expected when sales are made on account. A corollary is that the longer a customer's account remains unpaid, the less the likelihood of ever collecting it. This is quite often one reason why cash discounts are offered for prompt payment.

A certain percentage of total sales or credit sales for any accounting period, or the amount of outstanding accounts receivable at the close of any accounting period may be used as the basis for estimating the amount of uncollectible customers' accounts. Past experience will be the index for estimating what percentage of credit sales made during any one accounting period will never be paid in full. The credit

policy of the concern is a factor to be considered when estimating the amount of doubtful accounts to charge off periodically. A stringent credit policy, where financial ratings are carefully studied before credit is allowed, will mean, normally, a low percentage of losses from uncollectible accounts.

When the amount of the doubtful accounts has been estimated at the close of an accounting period, an adjusting entry is made as follows:

General Journal

Dec. 31	Doubtful Accounts	\$1,230 88			
	Reserve for Uncollectible Accounts			\$1,230 88	
	To charge operations for the				
	year ended Dec. 31, 19—, with-				
	one-half of 1% of net sales for				
	estimated uncollectible accounts				

The amount of doubtful accounts is shown in the income, profit and loss statement as an expense item. The reserve for uncollectible accounts appears on the balance sheet as a deduction from the accounts receivable. This reserve account is a valuation account and is a supplementary offset to the asset, accounts receivable. The reserve is used to reduce the book value of accounts receivable down to their estimated collectible value in the light of past experience.

Why should the amount of doubtful accounts, as an adjustment at the close of an accounting period, be considered as an expense of the period when the actual worthless accounts will not be known until subsequent periods? When the accounting system is operated on the accrual basis, all sales, both cash and credit, are considered as an income of the period in which they are made. It is logical, then, to anticipate any losses from uncollectible customers' accounts as an expense for the same period in which the sale is considered as income.

In the following period, when it is definitely known that certain accounts are uncollectible, the following entry should be made:

General Journal

19—									
		Reserve for Uncollectible accounts				\$78 90			
		John E. Marvin (Account Receivable)						\$78 90	
		To charge off uncollectible account of							
		above customer							

The account, Reserve for Uncollectible Accounts, absorbs the amount of customer's account which has proved to be uncollectible. The loss from the worthless account is not considered an expense in the year it is ascertained to be uncollectible, because such losses were anticipated and provision made for same by making the adjusting entry at the close of the preceding accounting period.

The provision for losses on uncollectible customers' accounts being an estimate, the amount rarely coincides with the actual loss from such a source. The following accounting period usually closes with either a debit or a credit balance in the Reserve account at the end of the fiscal year. The balance generally means that either an underestimate or overestimate of expense was made at the close of the preceding period, causing a misstatement of the net profit or net loss and a resultant misstatement of ownership. Theoretically, the balance in the account at the close of the accounting period should be closed out as an adjustment of the owner's Capital account. In practice, the balance is not so adjusted. Such procedure, while theoretically sound, runs counter to Federal Income Tax procedure, since an adjustment of the ownership account is equivalent to a revision of net profit or net loss for a preceding year. For small adjustments such a revision is not made. Actually, the account, Reserve for Uncollectible Accounts, remains open and a new credit posting finds its way into the account as a result of the adjusting entry made at the close of the following fiscal period.

4. Operating Reserves.

Operating reserves, like valuation reserves, are created as a result of certain charges being necessarily made to account for the proper expenses of the period. Operating reserves

differ, however, in respect to the reason for which they are created. Operating reserve accounts accumulate the credits resulting when monthly charges are made to the cost of production for estimated maintenance, inventory losses and other estimated expense items.

A. MAINTENANCE RESERVES.

1. *Reserve for Repairs.*—The equipment in many industries is subject to heavy use during part of the year, and to relatively light use the remainder of the year. When heavy demand is made on the equipment, little time is available for any but emergency repairs. During the off-season production, the necessary neglected repairs are made.

The ice industry furnishes a good example of this problem. During the summer months, the trucks and wagons, as well as the machinery, are in use 16 to 24 hours a day, while the equipment is relatively idle during the winter.

Obviously, under these circumstances, the months showing the smallest income would receive the heaviest expenses for repairs and *vice versa*. Providing a Reserve for Repairs account eliminates the heavy blow of repair charges during dull times and spreads it uniformly over the whole year. The cost of the annual repairs is estimated at the beginning of the accounting period. Each month one-twelfth of the per annum estimated cost is charged as an operating expense and a like amount credited to the Reserve for Repairs account. The adjusting entry is as follows:

General Journal

19—									
Jan.	31	Repairs to Wagons					\$66	91	
		Reserve for Wagon Repairs							\$66 91
		To charge operations with one-twelfth							
		of the estimated cost of wagon repairs							
		for the year 19—							

As the repairs are made during the year, the actual costs are charged against the Reserve account. The following entry illustrates the accounting procedure:

General Journal

19—							
Nov. 23	Reserve for Wagon Repairs			\$147	21		
	Hoke Lumber Company (Account Payable)					\$147	21
	To record cost of lumber used in repairing wagons						

2. *Reserves for Breakage and Reconditioning.*—Reserve accounts for these two items are identical in so far as the accounting procedure is concerned. While the accounts are also similar to the Repairs Reserve account, they are found in the books of industries of another type.

In the glass industry, particularly, is to be found the Reserve for Breakage account. Large clay melting pots are used in production of certain kinds of glassware. A pot may be broken during the first heat; others may last for months. To equalize the cost from month to month, a uniform charge is instituted monthly. The entry to record this monthly charge would be as follows:

General Journal

19—							
Feb. 28	Melting Pot Breakage			\$298	55		
	Reserve for Pot Breakage					\$298	55
	To set up monthly estimate of the cost of pot breakage						

As the pots are purchased to replace the ones broken in the process of production, the cost is charged against the reserve account which has been created by the above entry.

A similar condition is met in connection with the same type of reserve accounts in the open-hearth industry. Periodically the furnace must be relined. The cost of relining is not considered as a replacement of an asset, as is the case when an automobile or other fixed asset has been fully depreciated and is to be replaced. The cost of relining the open-hearth furnace is considered a cost of reconditioning in addition to the depreciation cost which is also present. Depreciation must also be taken into consideration on the open hearth as a complete unit. The Reserve for Relining

account accumulates a balance, as a result of monthly credits being posted to it, which are based upon the tonnage of steel produced. Against this balance is charged the cost of relining the furnace when its condition warrants the overhauling.

It is thus revealed that maintenance reserves are quite different from valuation reserves. Maintenance reserves are created in an effort to equalize monthly operating costs. They are not supplementary to any fixed asset accounts as are the depreciation, depletion, and doubtful account reserves.

If the actual expenses prove to be greater or less than the anticipated amount set up in the reserve accounts, the difference is closed into the Profit and Loss account at the of the accounting period.

B. INVENTORY RESERVES.

In setting up a Reserve for Inventory Losses account, the same purpose is achieved as is done by setting up maintenance reserve accounts. It is a well-known fact that the shortage and wastage take place in materials and supplies regardless of the safeguards planned to prevent them. Where a physical inventory is taken annually, the loss can be adjusted only through the Profit and Loss account at that time. As materials are usually purchased in bulk lots, but distributed to operations in small amounts, considerable quantities are lost through the measuring and weighing out, etc., of supplies charged into production. Since the shortage is a daily problem, it should be reflected in the monthly statements as an operating expense. To do so an entry is made monthly as follows:

General Journal

19—									
May	31	Inventory Shortage				\$83	33		
		Reserve for Inventory Shortage						\$83	33
		To charge operations with estimated loss for the month							

When the physical inventory is taken, the shortage is ascertained by comparing the book figures with the actual

value resulting from the physical count as shown in the following entry:

General Journal

19—									
Dec.	31	Reserve for Inventory Shortage				\$987	65		
		Inventory						\$987	65
		To charge the actual inventory							
		shortage against the reserve account							
		created for this purpose							

Any excess amount remaining in the Reserve for Inventory Shortage account after the above entry has been posted is closed to the Profit and Loss account. If the Reserve account balance is insufficient to absorb the figure representing the loss, the difference must be charged directly to the Profit and Loss account as unabsorbed inventory expense.

C. LIABILITY RESERVES.

Liability reserve accounts, as the third group of operating reserves, are similar to the maintenance and inventory reserves in that they attempt to charge operations with existing expenses the amount of which is unknown or uncertain. Liability reserve accounts differ from the other operating reserves in that they arise in connection with pure expense accounts instead of fixed assets and inventories.

1. *Reserve for Taxes.*—Some state and local taxes are levied on the basis of the volume of sales made during the year. The tax is payable in the subsequent year. To charge operations with the cost applicable to the present year, an adjusting entry is made at the close of each accounting period as follows:

General Journal

19—									
July	31	Taxes				\$67	67		
		Reserve for Taxes						\$67	67
		To charge operations with the esti-							
		mated cost of taxes applicable to July,							
		19—							

2. *Reserve for Water and Power.*—These reserve accounts are almost identical in nature with the Tax Reserve account. The only difference lies in the name in which the liability for payment is ascertained. The basis for the estimated charge will be the meter reading made and compared with the previous one made by the water or power companies.

3. *Reserve for Compensation Insurance.*—Insurance companies, writing employees' compensation insurance policies, bill the insured at the beginning of the calendar year for an arbitrary amount, always less than the total amount to be collected for the year. The total cost is based upon a percentage of each \$100 of payroll for each different occupation. The hazard and the death or injury rate experience of the preceding years for the various occupations determine the rates. Thus, the rates may change from year to year. The additional actual cost of this insurance becomes known only after the insurance company auditor has reviewed the Payroll and Wage accounts on the books of the insured company. This procedure takes place in the year following the close of the preceding accounting period.

Obviously, it becomes necessary to estimate this insurance cost in order to charge the period with the proper expense. The estimate may be made by applying the rates for the preceding year to the payroll for each month. The entry to reflect the compensation insurance charge for each month is as follows:

General Journal

19—									
Aug.	31	Compensation Insurance				\$49	89		
		Reserve for Compensation Insurance						\$49	89
		To charge operations with the esti-							
		mated cost for compensation insurance							
		for the month of August							

When the final bill is rendered in the following year for the balance of the premium after the payroll audit has been made, the entry made is as follows:

General Journal

19— Apr.	2	Reserve for Compensation Insurance Miners and Puddlers Insurance Com- pany (Account Payable) To charge the cost of compensa- tion insurance for the past year (19—) against the Reserve account set up for this purpose	\$531 79						
						\$531	79		

Inasmuch as the actual cost from this source is not known until some months after the net profit or net loss for the preceding period has been determined, theoretically any difference from the estimated cost set up in the Reserve account should be adjusted against the Capital or Surplus accounts. To be in harmony with Federal Income Tax practice, however, any excess amount in the reserve account is allowed to become applicable to the present period. If the actual cost is greater than the estimated amount, already charged to production and reflected in the reserve account, the difference is considered an additional expense in the period in which it becomes known.

4. *Reserve for Federal Income Tax.*—The nature of this reserve is described on page 139.

5. Capital Reserve.

Capital or surplus reserves are invariably found on the books of a business organized as a corporation. Ownership is reflected in two accounts on the books of a corporation. The ownership accounts are:

- a. Capital Stock, representing ownership investment, and
- b. Surplus, representing accumulated or undistributed profits.

Ownership in a corporation is represented by capital stock certificates showing the number of shares owned by each stockholder. Unlike the sole proprietorship and partnership type of business organization, the profits made in the corporation cannot be distributed to the stockholders until the board of directors so declares. The distribution of the profits is made in the form of a dividend, the rate of which is mentioned in par value capital stock certificates. Until the dividend is declared the profits repose in the Surplus account. The

entry for transferring the net profit to Surplus account is as follows:

General Journal

19—					
Dec. 31		Profit and Loss		\$6,493 56	
		Surplus			\$6,493 56
		To transfer the net profit of the period to surplus			

To record the declaration and payment of a cash dividend the entries would be as follows:

General Journal

19—					
Dec. 31		Surplus		\$3,600 00	
		Dividends Payable			\$3,600 00
		To set up the liability for payment of the regular 6 % dividend for the year ended Dec. 31, 19—, as contained in the minutes of the board of directors, dated Dec. 20, 19—			

Cash Disbursements Journal

19—					
Jan. 16		Dividends Payable	Payment of dividends declared	\$3,600 00	
		Cash (Cr.)	Dec. 20, 19—		\$3,600 00

It is not considered conservative accounting practice for the Surplus account to be reduced to low tide through the declaration of dividends. Frequently a portion of the earned surplus is reserved for some specific purpose. To provide for certain expenditures and probable losses which are not proper charges to current operations, surplus reserves are provided. Earned surplus reserves are shown in the classification at the beginning of this chapter. Each group will be described in detail in the following sections.

A. PLANT EXTENSION AND BETTERMENT RESERVES.

Improvements, betterments and additions to plant and equipment may be financed from accumulated profits in a corporation instead of bringing in new capital. If this is the policy of the board of directors, surplus must be reserved to provide for the purpose. Instead of paying ordinary or extra dividends from surplus, the earned profit is used to expand the plant or provide for more economical production. The present use of profits for expansion or improvements may be the cause for making increased profits in the future.

In order that the earned surplus will not be considered free and available for the purpose of declaring dividends, a surplus reserve is created by the following entry:

General Journal

19—					
Dec. 31	Surplus		\$25,000 00		
	Reserve for Plant Betterments			\$25,000 00	
	To provide for the financing				
	of machinery rearrangements,				
	additional equipment and con-				
	struction as set forth in a reso-				
	lution contained in the minutes				
	of the board of directors dated				
	Dec. 27, 19—				

As the betterments are made, the cost is charged to the asset accounts affected, because new equipment and construction have required outlays of cash. That is, a current asset has been displaced by a fixed asset in the amount of the cost of the betterments. After the betterments have been made, the purpose for which the Reserve for Plant Betterments account was created has been accomplished. After this has been done, there is no further need for the reserve account. The surplus so appropriated should be returned to the free earned surplus by merely reversing the last entry.

B. CONTINGENCY RESERVES.

Irregular and indefinite losses, which cannot properly be considered as operating expenses, may be provided for by setting up surplus reserves. Such losses may arise from fire, flood, strikes, litigation, obsolescence, expected future declines

in inventory values, etc. The creation of the reserve is the same as in the preceding illustration. Likewise the specific reserve is returned to surplus after the purpose for which it has been created has been accomplished.

C. FUND RESERVES.

The necessity for the establishment of specific funds frequently arises in a corporation. Fund reserves are often coexistent with the special funds. The necessity for special fund reserves is to insure the reservation of a sufficient amount of surplus to make sure that the special funds may be set aside from the general cash. Some special fund reserves are:

1. Sinking fund reserve.
2. Redemption fund reserve.
3. Replacement fund reserve.
4. Contingency fund reserve.

The entry to create the reserve is as follows:

General Journal

19—	Surplus	\$2,718 46			
	Bond Redemption Fund Reserve			\$2,718 46	
	To provide for setting aside a portion of surplus in accordance with the provisions of the 6%, 20-year bond issue of 19—				

At the maturity of the bonds 20 years later, the Bond Redemption Fund Reserve account has served its usefulness; hence, it is returned to surplus by a reversing entry:

General Journal

19—	Bond Redemption Fund Reserve	\$100,000 00			
	Surplus			\$100,000 00	
	To return to free surplus the amount of surplus appropriated for the specific purpose of insuring the establishment of the special redemption fund				

D. FEDERAL INCOME TAX RESERVE.

The amount of Federal Income Tax paid annually is based upon the taxable net income. This tax, therefore, cannot be considered as an expense of the business at any time. This tax is a levy against ownership or surplus. In a corporation the provision for setting up the liability for payment is made by the following entry:

General Journal

19—							
Dec. 31	Surplus			\$2,162	09		
	Reserve for Federal Income Tax					\$2,162	09
	To set up the liability for tax						
	payment for the year ended Dec.						
	31, 19—						

This reserve is more or less mongrel in nature. It is not an appropriated surplus reserve because the amount set aside will never be returned to surplus. As soon as the above entry is made, the Reserve account is considered as a current liability. It must be paid during the following year.

When the income tax is paid the following entry is made:

Cash Disbursements Journal

19—							
Mar. 13	Reserve for Federal In-						
	come Tax			\$2,162	09		
	Cash (Cr.)					\$2,162	09

6. Appraisal Reserves.

Buildings and plant equipment shown in their ledger accounts at cost value, less the balances in the valuation reserve accounts, reflect the present estimated book value of the respective assets. Certain factors may have arisen since the assets were acquired which cause the book value to be misstated. Depreciation rates used in the past may have been too high or too low. The replacement value of the plant equipment may be much higher than the book value shows, due to a steady upward trend in the market. Development of the community in which the buildings are located may have created a higher value applicable to the buildings than

their book value shows. Land may also have increased in present replacement value over its cost value. Experienced engineers can perceive whether or not there is a wide gap between book value and present replacement value as affected by the above mentioned factors. Such a survey of any fixed assets is called an appraisal.

Appraisals are made to show what the present estimated sound or accurate value of fixed assets is presumed to be for the following purposes:

1. To provide a basis for obtaining adequate insurance protection.
2. To establish accurate statements for credit purposes in:
 - a. Borrowing money.
 - b. Floating bonds.
 - c. Selling additional capital stock.
3. To show the true net worth prior to:
 - a. Selling the business.
 - b. Effecting a combination.

Whatever the reasons may be for having an appraisal made, the pertinent point to keep in mind is that any increase in value *actually has not been realized*. Therefore no profit has been made. Consequently, the increase in value should not be credited to earned surplus. If the replacement value of the land is \$10,000 greater than the book value shown at cost, then the entry to record the fact would be:

General Journal

19—						
Mar.	25	Land		\$10,000 00		
		Reserve for Appraisal Valuation			\$10,000 00	
		To record the estimated in-				
		crease in the value of the land				
		as result of an appraisal made				
		Mar. 16, 19—				

The amount representing the increase in the land value which is credited to the reserve account remains unchanged until another appraisal is made, or until the land is sold.

7. Secret Reserves.

Secret reserves are unrecorded on the books. They result from depreciation rates being used which tend to

understate asset values. It is possible to create the same condition by charging operating expense with costs which should be capitalized as assets. Either of these practices may be unintentional. Unscrupulous people may intentionally carry on these practices in an effort to understate profits. By so doing surplus is kept throttled down in order that an insufficient amount would be available from which to declare dividends. Such practice runs counter to income tax procedure and is to be severely condemned.

8. The Nature of Funds.

Cash withdrawn from the general cash and set aside for some specific purpose is called a "fund." As a general rule a fund is created by making cash contributions periodically. If the total fund requires some years to build up the sum needed, the cash contributions are frequently invested in marketable securities which are considered the fund. The securities constituting the fund should bring in a steady rate of return which of course augments the principal. Petty cash, store change and branch-house funds are considered as current assets and constitute a part of working capital. Other special funds, classified as fixed assets, are as follows:

1. Sinking funds.
2. Redemption funds.
3. Replacement funds.
4. Contingency funds.

This is not a complete classification but is sufficient for description insofar as funds pertain to industry.

A. SINKING FUND.

A sinking fund is created for the payment of some definite liability. The Bonds Payable account is credited when the bonds are originally issued as follows:

Cash Receipts Journal

19—									
Jan.	31	Bonds Payable	To record the	\$100,000	00			\$100,000	00
		Cash (Dr.)	original issue						
			of bonds						

The entry for the periodical contribution to the fund is as follows:

Cash Disbursements Journal

19— July 15	Bond Sinking Fund Cash (Cr.)	Yearly contribu- tion authorized by the board of directors on July 1, 19—	\$10,000 00		\$10,000 00
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When the bonds mature and payment to the bondholders takes place, the following entries are made:

Cash Receipts Journal

19— Dec. 20	Bond Sinking Fund Cash (Dr.)	To return to gen- eral cash the amount neces- sary for pay- ment of bonds due Dec. 23, 19—	\$100,000 00		\$100,000 00
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Cash Disbursements Journal

19— Dec. 23	Bonds Payable Cash (Cr.)	Payment of bonds at maturity	\$100,000 00		\$100,000 00
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In the last entry the Bonds Payable account is debited when the payment is made to the bondholders.

Additional entries are needed if the bonds contain a clause providing for the fund to be placed in the hands of a trustee. Another clause in the bonds may provide for a redemption fund reserve. The entries for the latter are shown on page 138.

B. REDEMPTION FUND.

A redemption fund is identical with a sinking fund except for the purpose for which it is created. Redemption funds

provide for the redeeming of indebtedness, usually capital stock, which is to be called at some future date. The entry for the periodical contribution to the fund is as follows:

Cash Disbursements Journal

19— July	1	Stock Redemption Fund Cash (Cr.)	Payment of an- nual contribu- tion to the fund	\$2,718 46				\$2,718 46
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At the end of each period, the fund having been invested at interest, an entry must be made to record the income earned:

Cash Receipts Journal

Dec. 31		Income on Stock Re- demption Fund Cash (Dr.)	Interest earned on fund		\$81 35			\$81 35
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To account for the income on the fund, an entry must be made to transfer the income to the Fund account as follows:

Cash Disbursements Journal

19— Dec. 31		Stock Redemption Fund Cash (Cr.)	Income on fund transferred to the Fund account		\$81 35			\$81 35
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The entries at the time of the maturity of the bonds will be:

Cash Receipts Journal

19— Jan. 1	1	Stock Re- demption Fund Cash (Dr.)	Transfer of Stock Redemption fund to General Cash	\$100,000 00				\$100,000 00
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Cash Disbursements Journal

19—								
Jan.	10	Capital Stock Cash (Cr.)	Payment to Stock- holders for Stock maturing at this date	\$100,000	00		\$100,000	00

C. REPLACEMENT FUND.

A fund created for the purpose of providing for the replacement of certain tangible fixed assets is termed a replacement fund. This practice is followed only in case the asset to be replaced represents an unusually large investment, the purchase of which would be too great a drain on the general cash. The contributions to the fund are based upon estimates which endeavor to have a sufficient amount in the fund to provide for the purchase of the new unit when the time arrives.

D. CONTINGENCY FUND.

Amounts of cash set aside to meet anticipated but uncertain events are called contingency funds. Any number may be created for such possibilities as floods, strikes, pending damage suits in long-drawn-out litigation, obsolescence, etc.

9. Computing the Fund Contributions.

The periodic contribution to any sinking fund is usually predetermined by setting up a table of annuities. For illustration, consider that a fund of \$50,000 is to be provided over a period of 5 years, equal contributions being made at the end of each year, and the fund to earn interest at 6 per cent. The annual contribution may be ascertained from the above data.

- (1) The amount of \$1 at 6 per cent compound interest for 5 years written as (1.06) equals 1.33822558.
- (2) 1.33822558 compound amount.

$$\begin{array}{r} 1. \quad \text{principal.} \\ 0.33822558 \text{ compound interest.} \end{array}$$
- (3) $0.33822558 \div 0.06 = 5.637093$, the amount of an ordinary annuity of \$1 at 6 per cent compound interest for 5 years.
- (4) $\$50,000 \div 5.637093 = \$8,869.82$ periodic contribution.

End of year	Contribution	Interest	Total fund
1	\$ 8,869.82		\$ 8,869.82
2	8,869.82	\$ 532.19	18,271.83
3	8,869.82	1,096.31	28,237.96
4	8,869.82	1,694.28	38,802.06
5	8,869.82	2,328.12	50,000.00
	\$44,349.10	\$5,650.90	

Questions

1. Describe what is meant by a "reserve" account.
2. What is meant by a "valuation" reserve? Name some illustrations of this type of a reserve.
3. What is the function of the account, Reserve for Uncollectible Accounts?
4. What different bases are used for estimating the amount of uncollectible accounts?
5. Why should doubtful accounts be considered as an expense in the present period when it is not definitely known until some subsequent period which customers' accounts and what amounts are uncollectible?
6. How should the adjustment for estimated uncollectible customers' accounts be handled in the work sheet?
7. What adjusting journal entry is made to reflect in the ledger accounts the estimated loss from accounts receivable?
8. When a customer's account proves to be uncollectible, what journal entry is necessary to write the balance in the account off the books?
9. What disposition is made of the balance in the account, Reserve for Uncollectible Accounts if the amount of actual worthless accounts proves to be more or less than the estimated amount set up in the reserve account?
10. Differentiate between an operating reserve and a valuation reserve.
11. Explain the function of maintenance reserves. Give an illustration of this type of reserve.
12. Explain the use of the account, Reserve for Inventory Shortage.
13. What is meant by "liability reserves?" Name several specific accounts which are listed under this classification of reserves.
14. Explain the difference between capital and operating reserves.
15. Name and describe the function of several capital reserves.
16. In what manner are capital reserves created?
17. What disposition is made of the capital reserve after the purpose has been accomplished for which it was created?
18. Explain the nature of the Reserve for Federal Income Tax account.
19. Describe what is meant by an appraisal reserve.
20. For what purposes are appraisals of tangible fixed assets made?

21. What is the important principle to remember in connection with recording the appraisal valuation?
22. What is a secret reserve?
23. Contrast a fund account with a reserve account.
24. Explain the use of:
 - a. Sinking fund.
 - b. Redemption fund.
 - c. Replacement fund.
 - d. Contingency fund.

CHAPTER X

THE CONSTRUCTION OF FINANCIAL STATEMENTS

1. The Purpose of Preparing Financial Statements.

Financial statements are prepared at the close of each month, quarter, half year, or year. The majority of firms prepare them monthly and yearly. They may be prepared at any time if all the postings are complete.

Financial statements portray in summary form the results of the hundreds and thousands of transactions which have taken place during the accounting period. The three financial statements already described present the following information:

1. *The statement of income, profit and loss* is a history of what has happened during each accounting period, disclosing the items of income and expense which have resulted in a net profit or a net loss.

2. *The statement of ownership* shows in what amount and why the owner's capital account has changed from the beginning to the close of the accounting period.

3. *The balance sheet* sets forth the financial condition of the business. It shows the asset values owned; the liabilities owed; and the ownership interest at the date prepared.

By reviewing the information contained in these three financial statements, the engineer and executive may make comparative analyses, substantiate surmises, establish deductions, interpret trends, and determine policies. Intelligent and effective managerial control and guidance are the fruits of carefully perusing these statements.

2. The Statement of Income, Profit and Loss.

This statement should be prepared from the work sheet after the latter has been completed. Emphasis is again placed on the type of account used in the preparation of the statement. The operating income and expense accounts are used exclusively in the preparation of this statement.

The statement of income, profit and loss may be said to be both supplementary and complementary to the balance sheet. It is supplementary in that it gives information pertaining to the financial condition of the business which is impossible to show in the balance sheet. It is complementary in that it gives a complete history of transactions in summary form concerning the factors bringing about the net profit or net loss.

The accepted form for the statement of income, profit and loss is the so-called "report" form as shown below. The heading of the statement is as important as the information which it contains. The name of the concern, name of the statement, and the date should always be shown in the order mentioned. It is significant to note that the date is for an elapsed period of time. A comprehensive income, profit and loss statement for a trading concern may be seen as follows:

FORM 31

W. E. CONKEL

STATEMENT OF INCOME, PROFIT AND LOSS

For the Period Jan. 1, 19— to Dec. 31, 19—

<i>Sales</i>	\$256,807.12	
<i>Less: Sales Returns and Allowances</i>	10,631.03	
<i>Net Sales</i>		\$246,176.09

Cost of Goods Sold:

Inventory, Jan. 1, 19—.....		\$ 38,894.16
Purchases.....	\$160,203.66	
<i>Less: Purchase Returns and Allowances</i> ..	571.53	
<i>Net Purchases</i>	\$159,632.13	
Freight and Cartage In.....	2,073.81	161,705.94
<i>Cost of Goods Available for Sale</i>		\$200,600.10
Inventory, Dec. 31, 19—.....		27,893.72
<i>Cost of Goods Sold</i>		172,706.38
<i>Gross Profit on Sales</i>		\$ 73,469.71

Selling Expenses:

Salesmen's Salaries and Commissions.....	\$ 23,584.08
Salesmen's Traveling Expenses.....	3,568.89
Store and Warehouse Wages.....	9,809.13
Automobile Expense.....	3,677.24
Depreciation on Automobile.....	1,545.24
Driver's Wages.....	2,584.17
Freight and Express Out.....	1,503.89
Shipping Expense and Supplies.....	1,137.56
Store Expense.....	585.27
Advertising.....	1,121.92
Depreciation on Store Fixtures.....	260.73
<i>Total Selling Expenses</i>	49,378.12
	\$ 24,091.59

FORM 31.—(Continued)

Administrative Expenses:

Rent.....	\$ 9,000.00	
Heat, Light, and Power.....	1,185.43	
Telephone and Telegraph.....	718.34	
Office Expense and Supplies.....	2,153.50	
Postage.....	854.73	
Insurance.....	1,778.46	
Legal and Professional Expense.....	2,656.10	
Office Salaries.....	8,576.97	
Depreciation on Office Equipment.....	505.45	
Taxes.....	1,096.23	
<i>Total Administrative Expenses.....</i>		28,525.21
<i>Net Loss from Operations.....</i>		\$ 4,433.62

Incidental Income:

Commissions Earned.....	\$ 639.30	
Interest Earned.....	14.00	
Rentals Earned.....	4,075.44	
Worthless Accounts Collected.....	60.33	
Purchase Discount.....	3,598.83	
<i>Total Incidental Income.....</i>		8,387.90
		\$ 3,954.28

Incidental Expenses:

Donations.....	\$ 60.08	
Doubtful Accounts.....	1,571.31	
Interest and Discount Paid.....	375.78	
Sales Discount.....	2,580.31	
<i>Total Incidental Expenses.....</i>		4,587.48
<i>Net Loss for Period, Jan. 1, 19— to Dec. 31, 19—.....</i>		\$ 633.20

The statement of income, profit and loss is composed of four major sections, namely,

1. *Operating Income (Sales).*
2. *Cost of Goods Purchased and Sold, or Cost of Goods Manufactured and Sold.*
3. *Operating Expenses.*
4. *Incidental Income and Expenses.*

The various aspects of each of these sections require some detailed description.

By operating income is meant the revenue resulting from the chief purpose for which the business was organized. Sales are the chief source of income for trading and manufacturing concerns. The purpose for organizing and operating such concerns is to sell, at a profit, the goods purchased or manufactured. Hence, sales constitute the operating income. The amount of gross sales should always be compared with the amount of net sales in the statement. The difference between gross and net sales is the amount of allowances on and the return of sales. A study of this comparison gives a valuable index to the management. Two sources of loss arise with the return of or allowance on a sale. First, the net

income is reduced in volume, and secondly, overhead expenses are increased in the form of correspondence, material handling, and bookkeeping involved in the return or allowance. There is little cause for alarm if the percentage of returns and allowances on sales is small in comparison with the gross sales. If the percentage is relatively high, the causes should be analyzed. What may be some of the causes for a high percentage of returns and allowances on sales? The most common ones are as follows:

1. Poor quality of goods sold, which means either:
 - a. The purchase of inferior goods by the vendor.
 - b. Faulty manufacture.
2. Salesmen have misrepresented goods to boost sales, and incidentally their commissions.
3. Salesmen have oversold their customers.
4. The shipping department has not exercised proper care in packing.

The second major section of the income, profit and loss statement analyzes the "cost of goods purchased and sold," or the "cost of goods manufactured and sold," dependent upon the type of business for which the statement is prepared. The former type of "cost" is described in this chapter; the latter in Chaps. XXIV and XXV. This section of the statement contains no items except those pertaining to the cost of the merchandise. Purchases should also be shown in both the gross and net amounts. The difference known as "purchase returns and allowances" is likewise a red target for the engineer to scrutinize. In the Purchase Returns and Allowance account balance is reflected the buying policy. Is the buyer or the purchasing agent exercising the *best* policies? The cost of freight, express, parcel post, and cartage on goods received for sale is considered as an additional cost of goods, and is added to the net purchases. The total cost of net purchases plus the inventory of merchandise inherited from the preceding accounting period becomes the cost of goods available for sale during the period. From this total is deducted the cost value of the goods remaining unsold, which gives the "cost of goods sold."

Much care must be exercised in ascertaining inventory values to be used in the preparation of the income, profit and loss statement. The inventory figures should be very care-

fully scrutinized. This is true because of the manner in which the value of the inventory is determined in a large business concern. Many employees are used in counting the units, which in turn have to be priced, extended, and totaled. A great many errors may creep in during the process of the physical count, pricing, and price extension, so that the total inventory figure may be far from an accurate one. In the larger, modern trading and manufacturing concerns, perpetual inventories obviate these criticisms to some degree. Even though a perpetual inventory may be in use, periodic checks on the quantities are maintained. Future chapters describe the handling of inventories in greater detail. Since the inventory value is ascertained through the combined efforts of many, its value may be grossly misstated. If such is the case, the profits likewise will be misstated. An illustration will show the effect of misstating the inventory value.

FORM 32

COMPARATIVE CONDENSED STATEMENTS OF INCOME, PROFIT AND LOSS

<i>Net Sales</i>	\$246,176.09		\$246,176.09
<i>Cost of Goods Sold:</i>			
Inventory, Jan. 1, 19—.....	\$ 38,894.16	\$ 38,894.16	
Net Purchases.....	159,632.13	159,632.13	
Freight and Cartage In.....	2,073.81	2,073.81	
<i>Cost of Goods Available for Sale</i>	\$200,600.10	\$200,600.10	
Inventory, Dec. 31, 19—...	27,893.72 ¹	37,893.72 ¹	
<i>Cost of Goods Sold</i>	172,706.38	162,706.38	
<i>Gross Profit</i>	\$ 73,469.71	\$ 83,469.71	
<i>Selling Expenses</i>	\$ 49,378.12	\$ 49,378.12	
<i>Administrative Expenses</i>	28,525.21	28,525.21	77,903.33
<i>Net Loss from Operations</i>	\$ 4,433.62		
<i>Net Profit from Operations</i>			\$ 5,566.38
<i>Incidental Income</i>	8,387.90		8,387.90
	\$ 3,954.28		\$ 13,954.28
<i>Incidental Expenses</i>	4,587.48		4,587.48
<i>Net Loss for Period to Capital</i>	\$ 633.20		
<i>Net Profit for Period to Capital</i>			\$ 9,366.80

¹ Note difference of \$10,000 in the closing inventory values.

The amounts shown in the first two columns at the left are taken from the detailed income, profit and loss statement shown in Form 31. The amounts in the two columns on the right-hand side are identical with those to the left with the exception of the inventory value at Dec. 31, 19—, which is shown at a value of \$37,893.72. Assume that this overstate-

ment of the inventory value by \$10,000 was a result of an error in footing the total of the inventory sheets. This causes the cost of goods sold to be understated by \$10,000, with a resultant overstatement of the gross profit by \$10,000, and a final net profit of \$9,366.80, instead of a final net loss of \$633.20. It is thus shown that an overstated inventory figure at the close of the period tends to overstate the net profit. Conversely, an understated inventory figure at the close of the accounting period will cause the net profit to be understated. Conservative accounting practice adheres to the policy of valuing inventories at "cost or market, whichever is the lower." In so doing, profits are not overstated. An overstatement of profits creates a false enthusiasm on the part of the owners as to earnings and financial condition.

By comparing the net sales with the cost of goods sold, gross profit is ascertained. Gross profit must be more than sufficient to cover all operating expenses and incidental expenses if a net profit is to be realized. Goods purchased or manufactured must have a mark-on of profit sufficiently high to provide for an adequate percentage of gross profit to cover both operating and incidental expenses as well as providing for an adequate rate of return on the capital invested.

The operating expenses comprise the third major section of the income, profit and loss statement. Usually operating expenses are divided into two groups, namely,

1. Selling expenses.
2. General and administrative expenses.

Included under the caption of "selling expenses" should be all the costs of distributing or marketing the product. General and administrative expenses should include all costs involved in carrying out the executive policy of the business. The combined selling, and general and administrative expenses deducted from the gross profit leaves a remainder known as the net profit or net loss from operation of the business.

The fourth and last section of the statement of income, profit and loss, itemizes the incidental expenses and incidental incomes. This final section of the statement is otherwise known as "other income and expense," "non-operating income and expense," and "financial management income and expense."

The items listed under incidental income and incidental expense are the miscellaneous income and expense items which

arise incidentally in carrying on trading or manufacturing operations. The business is not organized expressly for the purpose of earning such income or incurring such expenses. But during the process of carrying on the ordinary business transactions these items of expense and income are bound to arise. Since they represent business transactions they must be recorded.

The final net profit or net loss, which is ascertained after taking into consideration the incidental expenses and income with the net operating profit or net loss from operations, is the figure used to adjust the owner's Capital account at the close of the accounting period.

3. The Statement of Ownership.

It has been mentioned that the statement of ownership is the connecting link between the statement of income, profit and loss and the balance sheet. In addition to performing this function, the statement of ownership shows all the factors changing ownership during the accounting period. The factors influencing ownership, so far described, are as follows:

1. Transactions recorded during the period:

- a. Withdrawals of merchandise, cash, or other assets by the owners.
- b. Additional investments of cash or other assets by the owners.
- c. Assumption of owner's debts by the business.

2. Net profit or net loss of the accounting period as ascertained in the work sheet, or by the preparation of the income, profit and loss statement.

- a. Final net profit.
- b. Final net loss.

Ownership either increases or decreases within any given accounting period in accordance with the relative effect of the various factors named above. These factors are always variables. A net profit for the period does not necessarily imply that a net increase in ownership will result. Withdrawals in excess of the net profit or combined net profit and added investments will result in a net decrease in ownership. This condition is illustrated in Case 1, below. Three

other combinations also show the influence of the variables on the owner's Capital account.

	Case 1	Case 2	Case 3	Case 4
Capital Account at Beginning of the Period.....	\$40,000	\$40,000	\$40,000	\$40,000
Additional Investments.....	2,500	5,000	8,000	3,000
	\$42,500	\$45,000	\$48,000	\$43,000
Withdrawals.....	5,500	2,000	2,000	4,000
Net Ownership Investment before Considering the Net Profit or Net Loss.....	\$37,000	\$43,000	\$46,000	\$39,000
Net Profit.....	2,500	2,500		
Net Loss.....			1,000	1,000
Capital Account at the Close of the Period.....	\$39,500	\$45,500	\$45,000	\$38,000
Net Increase in Ownership.....		\$ 5,500	\$ 5,000	
Net Decrease in Ownership.....	\$ 500			\$ 2,000

Withdrawals and additional investments by the owner do not constitute an expense of or an income to the business. The sole owner of a business may elect, or partners may agree, to withdraw a weekly wage. Their argument is, usually, that if they did not devote their entire attention to the business, they would be forced to hire a manager who would have to be paid a salary. This appears to be a logical contention at first thought. But from an economic point of view, individual owners engage in business for the purpose of profit making, not salary earning. The Federal Income Tax law also takes this point of view. Provisions of the law specify that wages and salaries withdrawn by individual or partnership owners must not be considered as expenses but withdrawals of anticipated profits. This is equivalent to saying that withdrawals by the owner, are a decrease of capital investment. When the owner makes an investment, there is not an element of profit involved in the transaction; consequently, income is not affected. Withdrawals and additional investments are purely capital transactions.

Adjustments of profits or losses for prior periods also are shown in the statement of ownership. Errors may have been made in analyzing or recording transactions which are not

revealed until some subsequent accounting period. If the errors affect operating accounts, then the net profit for some preceding year has been misstated, with a concomitant misstatement of the ownership at the close of that particular year. Ownership then is inaccurate until it is corrected. Theoretically, the amount of the error should be a direct adjustment in the owner's Capital account. In practice, however, unless the error is quite large in amount, it is handled as a current transaction in the period when discovered. The reason for practice taking precedent over theory is the Federal Income Tax law. A provision of this law requires an amended tax return to be prepared whenever the profit for a prior year has been adjusted, for which a tax return has already been submitted.

The statement of ownership for the business of William E. Conkel, whose statement of income, profit and loss appears in Form 31, is shown as follows:

FORM 33

WILLIAM E. CONKEL

STATEMENT OF OWNERSHIP

Jan. 1, 19—, and Dec. 31, 19—

Capital, Jan. 1, 19—.....	\$74,455.75	
Additional Investments within the Year.....	none	
		\$74,455.75
Withdrawals within the Year.....	\$7,800.00	
Net Loss for the Period, Jan. 1, 19—, to Dec. 31,		
19—.....	633.20	8,433.20
Capital, Dec. 31, 19—.....		<u>\$66,022.55</u>

The heading is the first point to consider in preparing the statement of ownership. It consists of the name of the concern, name of the statement, and the date. The date should be shown both at the beginning and at the close of the accounting period in the heading. The ownership value at the close of the year, \$66,022.55, is the figure used in the balance sheet, representing Conkel's capital at Dec. 31, 19—. This statement of ownership, thus, is the bridge between the income, profit and loss statement and the balance sheet.

4. The Balance Sheet.

The balance sheet derives its name from the ownership equation which is ever present in this financial statement.

Assets are equal to and balance the rights to the assets. The rights are those of the creditors of the business who have loaned their capital in the form of credit and the capital invested by the owner.

The accounts used in the preparation of the balance sheet are capital accounts only. Capital accounts represent the real values in the business as follows:

1. Assets are values owned.
2. Liabilities are the values owed.

3. Ownership is the value invested by the owner, plus accumulated profits and minus accumulated losses.

The account form of the balance sheet has been shown in preceding illustrations. The report form is used in the following illustration. The date of the balance sheet is quite as important in the heading, as it is in the two preceding statements already described. The date is shown at a given time, however, in the balance sheet. The engineer is interested in knowing what the asset and liability values are at a certain date.

The balance sheet for the business of William E. Conkel is shown as follows:

FORM 34
WILLIAM E. CONKEL
BALANCE SHEET

Dec. 31, 19—
ASSETS

Current Assets:

Cash.....		\$12,210.14	
Accounts Receivable, Trade.....	\$27,639.08		
<i>Less: Reserve for Uncollectible Accounts....</i>	<u>1,571.31</u>	26,067.77	
Accounts Receivable, Employees.....		580.68	
Commissions Receivable.....		339.62	
Merchandise Inventory.....		<u>27,893.72</u>	\$67,091.93

Temporary Investments:

Nordyke Novelty Company Bonds ¹			480.00
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Deferred Charges to Operations:

Prepaid Insurance.....	\$	193.57	
Inventory Shipping Supplies.....		64.82	
Inventory Office Supplies.....		<u>741.03</u>	999.42

Fixed Assets:

Automobiles.....	\$	6,180.96	
<i>Less: Reserve for Depreciation.....</i>	<u>3,090.48</u>	\$ 3,090.48	
Store Fixtures.....	\$	1,738.20	
<i>Less: Reserve for Depreciation.....</i>	<u>1,042.92</u>	695.28	
Office Equipment.....	\$	5,054.50	
<i>Less: Reserve for Depreciation.....</i>	<u>2,021.80</u>	<u>3,032.70</u>	6,818.46
<i>Total Assets.....</i>			<u><u>\$75,389.81</u></u>

FORM 34.—(Continued)
LIABILITIES AND OWNERSHIP

Current Liabilities:

Notes Payable.....	\$	783.37	
Accounts Payable.....		7,703.84	
Accrued Salaries.....		520.16	
Reserve for State Taxes.....		190.08	\$ 9,197.45

Deferred Credits to Operation:

Prepaid Rentals Received.....			169.81
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Ownership:

William E. Conkel, Capital.....		66,022.55	
<i>Total Liabilities and Ownership.....</i>		<u>\$75,389.81</u>	

¹ (Shown at cost; market value \$515.)

Within the bounds of the balance sheet are many items in which the engineer is interested. Chief among them is the problem of property valuation. The valuation of the inventory has already been touched upon. Valuation principles pertaining to other current and fixed assets are described in Chaps. XIII and XIV. Suffice it to enumerate at this point the items which have valuation problems: inventories, accounts receivable, securities, delivery equipment, land, buildings, machinery, furniture and fixture, tools, patterns, patents, etc. All tangible fixed assets in a trading or manufacturing plant, with the exception of land, are subject to depreciation. Depreciation is inseparably tied up with fixed asset valuation. The engineer is vitally interested in the phase of accounting pertaining to valuation.

5. The Worth of Financial Statements.

The installation and operation of an accounting system is prerequisite to effective managerial control. Many business transactions occurring within an accounting period would be lost sight of at the close of the period if they were not journalized and recorded in the accounts. Financial statements constructed at the close of an accounting period are supposed to reflect in summary form the financial status of the business. The statements are used as the bases for study, interpretation, and the formulation of future plans and policies. Even though important decisions are made from the financial statements, there are limitations attached to them.

Financial statements are not statements of fact, but *estimates* only. Two persons may prepare the same financial statements from the same trial balance and each show a

different net profit or net loss. It is quite possible that their opinions and estimates would vary in regard to inventories, depreciation, and other items subject to valuation. The more familiar one is with the theory and principles of accounting, however, the greater are the chances of more accurate statements. There is no such thing as a *correct* or *true* financial statement. As long as estimates and opinion are necessary in fixing the value of assets subject to depreciation and as long as inventory values must be ascertained by reckoning, there can never be financial statements which are correct to the last dollar.

6. Financial Measurements and Comparisons.

Effective business control results from analyses made from financial statements. The comparison of absolute figures of one accounting period with the amounts of like items for another period frequently brings to light malconditions within the business. The comparison of relative amounts in the form of percentages are frequently more enlightening than the comparison of absolute figures. Certain financial measurements and ratios exist in both the income, profit and loss statement and the balance sheet. Certain relationships are found to exist also between the two statements.

FORM 35

WILLIAM E. CONKEL

COMPARATIVE STATEMENT OF INCOME, PROFIT AND LOSS

For the years ended Dec. 31, 19— and Dec. 31, 19—

	(Present Year) Dec. 31, 19—	(Past Year) Dec. 31, 19—	Increase or Decrease ¹
<i>Sales:</i>			
Sales	\$256,807.12	\$245,245.30	\$11,561.82
Less: Sales Returns and Allowances	10,631.03	2,611.98	8,019.05
Net Sales	<u>\$246,176.09</u>	<u>\$242,633.32</u>	<u>\$ 3,542.77</u>
<i>Cost of Goods Sold:</i>			
Inventory at Beginning of Year	\$ 38,894.16	\$ 35,437.89	\$ 3,456.27
Purchases during Year	160,203.66	169,234.49	9,030.83 ¹
Freight and Cartage In	2,073.81	3,153.46	1,079.65 ¹
Total	<u>\$201,171.63</u>	<u>\$207,825.84</u>	<u>\$ 6,654.21¹</u>
<i>Deduct:</i>			
Inventory End of Year	\$ 27,893.72	\$ 38,894.16	\$11,000.44 ¹
Purchase Returns and Allowances	571.53	470.10	101.43
Total	<u>\$ 28,465.25</u>	<u>\$ 39,364.26</u>	<u>\$10,899.01¹</u>
Net Cost of Goods Sold	<u>\$172,706.38</u>	<u>\$168,461.58</u>	<u>\$ 4,244.80</u>
Gross Profit on Sales	<u>\$ 73,469.71</u>	<u>\$ 74,171.74</u>	<u>\$ 702.03¹</u>

FORM 35.—(Continued)

Selling Expenses:

Salesmen's Salaries.....	\$ 23,584.08	\$ 21,226.79	\$ 2,357.29
Salesmen's Traveling Expenses.....	3,568.89	3,991.16	422.27 ¹
Store and Warehouse Wages.....	9,809.13	9,991.58	182.45 ¹
Automobile Expense.....	3,677.24	2,818.74	858.50
Depreciation on Automobile.....	1,545.24	1,542.18	3.06
Driver's Wages.....	2,584.17	3,133.78	549.61 ¹
Freight and Express Out.....	1,503.89	861.21	642.68
Shipping Expense and Supplies.....	1,137.56	1,113.11	24.45
Store Expense.....	585.27	691.43	106.16 ¹
Advertising.....	1,121.92	1,393.98	272.06 ¹
Depreciation on Store Fixtures.....	260.73	258.10	2.63
<i>Total Selling Expense.....</i>	<i>\$ 49,378.12</i>	<i>\$ 47,022.06</i>	<i>\$ 2,356.06</i>

<i>Balance of Gross Profit After Deducting Selling Expenses.....</i>	<i>\$ 24,091.59</i>	<i>\$ 27,149.68</i>	<i>\$ 3,058.09¹</i>
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Administrative Expenses:

Rent.....	\$ 9,000.00	\$ 8,500.00	\$ 500.00
Heat, Light and Power.....	1,185.43	1,098.79	86.64
Telephone and Telegraph.....	718.34	561.75	156.59
Office Expense and Supplies.....	2,153.50	2,175.22	21.72 ¹
Postage.....	854.73	1,043.21	188.48 ¹
Insurance.....	1,778.46	1,547.34	231.12
Legal and Professional Expense.....	2,656.10	2,489.36	166.74
Office Salaries.....	8,576.97	7,839.88	737.09
Depreciation Office Equipment.....	505.45	499.71	5.74
Taxes.....	1,096.23	1,024.28	71.95
<i>Total Administrative Expenses.....</i>	<i>\$ 28,525.21</i>	<i>\$ 26,779.54</i>	<i>\$ 1,745.67</i>

<i>Net Profit or Loss from Operations.....</i>	<i>\$ 4,433.62¹</i>	<i>\$ 370.14</i>	<i>\$ 4,803.76¹</i>
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Incidental Income:

Commissions Earned.....	\$ 639.30	\$ 1,323.57	\$ 684.27 ¹
Interest Earned.....	14.00	4.64	9.36
Rentals Earned.....	4,075.44	3,536.98	538.46
Worthless Accounts Collected.....	60.33	101.48	41.15 ¹
Purchase Discount.....	3,598.83	3,050.03	548.80
<i>Total Incidental Income.....</i>	<i>\$ 8,387.90</i>	<i>\$ 8,016.70</i>	<i>\$ 371.20</i>
	<i>\$ 3,954.28</i>	<i>\$ 8,386.84</i>	<i>\$ 4,432.56¹</i>

Incidental Expenses:

Donations.....	\$ 60.08	\$ 467.90	\$ 407.82 ¹
Worthless Accounts.....	1,571.31	1,218.99	352.32
Interest and Discount Paid.....	375.78	96.05	279.73
Sales Discount.....	2,580.31	2,417.20	163.11
	<i>\$ 4,587.48</i>	<i>\$ 4,200.14</i>	<i>\$ 387.34</i>

<i>Net Income or Loss ⁽¹⁾ for the Year.....</i>	<i>\$ 633.20¹</i>	<i>\$ 4,186.70</i>	<i>\$ 4,819.90</i>
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¹ Items so marked represent decreases or losses.

In the preceding comparative statement of income, profit and loss, the amount of absolute increase or decrease of each item is shown. Even though gross sales increased \$11,561.82 over the preceding year, there was an accompanying decrease of \$4,819.90 in net profit. The causes are seen to lie chiefly in increased sales returns, and increased selling and administrative expenses.

7. Income, Profit and Loss Statement Measurements and Ratios.

a. Ratios of Costs and Expenses to Net Sales.

While the preceding comparative statement has its advantages in the detailed comparisons shown, it also has its limita-

tions. The preceding statement may be earnestly reviewed, yet many facts may escape observation when percentages and ratios are not shown. Percentages give relative differences which furnish a different concept in the comparison of income and costs, than does a comparison of absolute figures.

A very common financial measurement is made by showing the ratio of "net sales" to all of the other major divisions of the statement of income, profit and loss. The base used in making the comparisons is always net sales. Net sales represents a more conservative figure than gross sales, since no income is realized from the sales returns and allowances.

A condensed statement of income, profit and loss will illustrate this method of financial measurement.

FORM 36

WILLIAM E. CONKEL

CONDENSED COMPARATIVE STATEMENT OF INCOME, PROFIT AND LOSS
For the Years Ended, Dec. 31, 19— and Dec. 31, 19—

	(Present year) Dec. 31, 19—	(Past year) Dec. 31, 19—
<i>Sales</i>	\$256,807.12	\$245,245.30
	<u>104.32 %</u>	<u>101.07 %</u>
<i>Net Sales</i>	246,176.09	242,633.32
	<u>100 %</u>	<u>100 %</u>
<i>Cost of Goods Sold</i>	\$172,706.38	\$168,461.58
	<u>70.16 %</u>	<u>69.43 %</u>
<i>Gross Profit</i>	\$ 73,469.71	\$ 74,171.74
	<u>29.84 %</u>	<u>30.57 %</u>
<i>Selling Expenses</i>	\$ 49,378.12	\$ 47,022.06
	<u>20.06 %</u>	<u>19.38 %</u>
<i>Administrative Expenses</i>	\$ 28,525.21	\$ 26,779.54
	<u>11.59 %</u>	<u>11.04 %</u>
Net Profit or (Loss ¹) for Operations.	\$ 4,433.62 ¹	\$ 370.14
	<u>1.81 %¹</u>	<u>0.15 %</u>
Total Incidental Income.....	\$ 8,387.90	\$ 8,016.70
	<u>3.41 %</u>	<u>3.30 %</u>
Total Incidental Expenses.....	\$ 4,587.48	\$ 4,200.14
	<u>1.86 %</u>	<u>1.73 %</u>
Net Income or (Loss ¹).....	\$ 633.20 ¹	\$ 4,186.70
	<u>0.26 %¹</u>	<u>1.72 %</u>

¹ Items so marked represent losses.

Thus the ratios of all the main captions of the statement of income, profit and loss are shown. These ratios are of

greater significance than absolute figures, because the percentage to the whole (net sales 100 per cent) is much more easily visualized. The fluctuating value of the dollar is likewise eliminated when percentages are used. In nearly every line of business endeavor, through the medium of trade associations, there has been worked out a standard percentage for each of these main captions. A member of the association, by comparison, can easily tell whether his result is out of line with the standard. Over a period of several years an average of these ratios may be used to check the percentages of each succeeding year for any business.

b. Turnover of Inventories.

The turnover of inventories is another valuable measurement of the financial welfare of the business. The turnover of the merchandise inventory expresses the rapidity with which the stocks of goods are disposed of and replenished. One of the secrets of financial success is quick inventory turnover. The smaller the amount tied up in inventories, to handle a given volume of sales, the greater will be the percentage of return earned on the investment.

The turnover of merchandise inventory is computed by dividing the cost of goods sold by the average of the inventories on hand at the beginning and the close of the accounting period. A more refined turnover figure may be computed by averaging the monthly inventories. On page 148, the inventories are shown to be as follows:

At the Beginning of Year.....	\$ 38,894.16
At End of Year.....	27,893.72
	<u>2)66,787.88</u>
Average Inventory.....	\$ 33,393.94
Cost of Goods Sold.....	\$172,706.38
$\$172,706.38 \div \$33,393.94 = 5.17$	

The merchandise for the year was turned over 5.17 times. This is equivalent to saying that a stock of goods costing \$33,393.94 was purchased and sold 5.17 times during the year. If a smaller stock of goods could have been maintained with the same amount of sales being made, the turnover naturally would have been greater.

The turnover of work in process inventory as shown in the statement of cost of production in Chap. XXV is com-

puted by dividing the cost of goods produced by the average work in process inventory.

Turnover of the raw material inventory is computed by dividing the cost of raw materials used by the average raw material inventory.

8. Balance Sheet Measurements and Ratios.

a. Working Capital and Ratios.

One of the most important financial measurements found in the balance sheet is the working capital ratio. Net working capital is the difference between the current assets and current liabilities. Hence the necessity for proper classification of capital accounts in the balance sheet.

The net working capital of William E. Conkel's business as shown in the balance sheet in form 34 is \$57,894.48, determined in the following manner:

Current Assets.....	\$67,091.93
Current Liabilities.....	9,197.45
	\$57,894.48

The ratio of current assets to current liabilities is 7.29 per cent.

The importance of working capital and a sufficiently high ratio is to take advantage of purchase discounts which insure the payment of the current liabilities as they mature. At the same time sufficient inventories and cash should be on hand to insure ready shipments and provide for the payment of current expenses.

b. Investment of Capital in Various Assets.

In this financial measurement may be seen the managerial policy of the business. What is the percentage of total capital invested which is tied up in the various asset groupings? A comparison of balance sheets will show whether machinery is being increased in value from year to year, thereby displacing labor. What is the ratio of current to fixed asset groups? Is there too much money tied up in equipment in proportion to sales? These are only a few of the pertinent questions that may arise after a comprehensive study of the balance sheet by the engineer.

9. Relationship between the Statement of Income, Profit and Loss and the Balance Sheet.

a. *Turnover of Net Working Capital.*

This turnover figure is found by dividing net sales by the average amount of working capital on hand at the beginning and the close of the same accounting period.

Net Working Capital—Jan. 1, 19—.....	\$ 57,968.81
Net Working Capital—Dec. 31, 19—.....	57,894.48
	<u>\$115,863.29</u>
Net Working Capital Average.....	\$ 57,931.65
Net Sales.....	\$246,176.09
\$246,176.09 ÷ \$57,931.65 = 4.249, net working capital turnover.	

The prosperity of the business varies in direct proportion to the turnover of net working capital. An average working capital of \$57,931.65 was available during the same period in which net sales of \$246,176.09 were made. An increase of sales with the use of as little working capital as possible means the greater will be the return on the ownership investment.

b. *Turnover on Fixed Property Investments.*

This turnover figure represents the relationship between the volume of sales and the amount of capital tied up in plant and equipment. The greater the net sales and the less the amount of plant and equipment investment the smaller the fixed charges, such as insurance, depreciation, etc.

The turnover figure is found by dividing the amount of net sales by the amount of the fixed property investment.

c. *Turnover of Accounts Receivable.*

The turnover of accounts receivable is a reflection upon the credit and collection policy of the business. Capital tied up in customers' accounts, past due, costs the owner money. If the credit period of the business concern is uniformly "2/10—n/30," the turnover or age of accounts receivable will show whether the accounts are past due.

The turnover figure is ascertained by the following procedure:

$$\frac{\text{Net Accounts Receivable at Close of Period}}{\text{Net Sales for Period}} \times \text{Number of months in period} \times$$

$$\frac{360}{\text{(Number of days in month)}} = \text{Age in days of Accounts Receivable}$$

$$\frac{\$26,067.77}{\$246,176.09} \times 12 \times 30 = 0.105890 \times 360 = 38 \text{ days.}$$

This figure of 38 days means that the collection of outstanding accounts receivable is 8 days over the net credit period of 30 days.

d. Return Earned on Capital Invested.

This financial measurement shows the amount earned on the owner's investment. It is found by dividing the net profit by the amount of owner's capital invested. It is an index disclosing whether or not a sufficient percentage is being earned on the capital invested.

10. Other Financial Measures and Ratios.

Although the more important financial measures and ratios have been described, there are many others which may be computed. Lack of space prevents presentation of additional ones in this text.

Questions

1. What purposes are served by the preparation of the statement of income, profit and loss?
2. What accounts are used in its preparation?
3. What should be included in the heading of this statement?
4. What are the main divisions of the statement of income, profit and loss?
5. In what manner is the cost of goods sold computed?
6. What is the difference between operating income and incidental income?
7. Differentiate between gross profit and net profit.
8. If the new inventory value is overstated, what is the effect upon the net profit? The net loss?
9. Operating expenses are usually divided into what groups?
10. What items are included under incidental expenses?
11. What is the function of the statement of ownership?
12. What items are used in its preparation?
13. Why are withdrawals by the owner not considered as an expense of the business?
14. In what manner does the heading in the statement of ownership differ from the heading of the balance sheet?
15. What is the purpose of the balance sheet?
16. What accounts are used in the preparation of the balance sheet? What equation underlies its structure?
17. What major groupings are shown in the balance sheet?
18. Are financial statements purely statements of fact?
19. What values result from making a study of comparative income, profit and loss statements and balance sheets?

20. Discuss the relative values of absolute comparisons with ratios and financial measurements.

21. When percentage comparisons are made in the statement of income, profit and loss, what item is used as the base?

22. What is the significance of inventory turnover?

23. What is working capital and of what importance is it?

CHAPTER XI

CLOSING THE OPERATING ACCOUNTS

1. The Accounting Cycle.

With the termination of each fiscal period a complete cycle of accounting activities has elapsed. These activities in the order of their occurrence are as follows:

1. Recording transactions in the various journals.
2. Posting from the journals to the ledger accounts.
3. Preparing the monthly trial balances.
4. Preparing the work sheet.
5. Preparing the financial statements from the work sheet.
6. Closing the operating accounts.
7. Preparing a proof trial balance after the process of closing has been completed.

After the proof trial balance has been taken, the ledger accounts are again ready to receive postings applicable to the next accounting period.

2. The Process of Closing.

The term "closing" in accounting terminology means the transferring of the balances in the operating accounts to an account labeled Profit and Loss. The second step in closing is to transfer the balance from the Profit and Loss account to the owner's Capital account. The third step is the transference of the balance from the owner's Personal account to his Capital account.

The preparation of monthly financial statements does not necessitate closing the operating accounts. Financial statements may be prepared from the work sheet. The actual process of closing usually takes place but once a year.

3. The Purpose of Closing.

The owner's Capital account must reflect the same value, at the close of each accounting period, as the balance sheet shows

at the end of the same period. Thus, a permanent record of the amount of capital invested at the end of each fiscal period is shown in the ledger.

The factors causing a change in the Capital account from period to period are four in number as follows:

a. Withdrawals of capital	{	This information is usually recorded in the Personal account.
b. Added investments of capital		
c. Net loss from operations	{	This information is recorded in the summary of operating accounts.
d. Net profit from operations		

It has been stated previously that the operating accounts record the changes in ownership resulting from the operations of the business. Separate accounts with various income and expense items give a detailed analysis of the period's transactions pertaining to profit making. These account balances are used to prepare the income, profit and loss statement at the close of the fiscal period. After these balances have served this purpose, they are dispensed with through the process of closing. In transferring the balance of each operating account to the Profit and Loss account, a permanent record is made on the books of the net profit or net loss for each fiscal period. The figure reflecting the net profit or net loss for the fiscal period should be the same in both the Profit and Loss account and the statement of income, profit and loss.

Another advantage results from closing the ledger. A mass of postings are removed from the operating accounts which have accumulated during the fiscal period.

4. The Procedure in Closing the Operating Accounts.

There are five distinct steps involved in closing the balances from the operating accounts in the ledger:

1. Recording and posting the adjusting entries.
2. Transferring the balance from the operating accounts to the Profit and Loss account.
3. Transferring the balances from the Profit and Loss account to the owner's Capital account.
4. Transferring the balance from the owner's Personal account to the owner's Capital account.
5. Ruling the operating accounts.

It must be remembered that two other stages of the accounting cycle precede the process of closing. The preliminary step in closing is the preparation of the trial balance, which in turn is used in the preparation of the work sheet. The trial balance provides a complete list of expense and income accounts covering the recorded transactions for the accounting period. Secondly, the unrecorded data applicable to the period must be incorporated with the recorded data already in the operating accounts. These unrecorded items represent the inventories of materials, merchandise, and supplies, accrued expenses, accrued incomes, prepaid expenses, prepaid incomes, depreciation, and estimated reserves.

5. Preparation of Adjusting Entries.

It has already been described in connection with the new inventory, prepayments, and accruals, why it is necessary to consider adjustments. The manner in which these adjustments are handled in the work sheet also has been illustrated. After the work sheet has been completed, it is a simple matter to record the adjustments. Recording and posting the supplementary data unrecorded at the time of closing are effected through the adjusting entry.

Adjusting entries are made in the general journal from where they are posted to the ledger accounts. In this manner the operating accounts are adjusted to show the expense and income accurately for the period. The ledger accounts prior to the preparation of a trial balance are illustrated below in order to show clearly how the adjusting entries affect the operating accounts. These ledger accounts furnish the balances which were used in the work sheet illustration at the close of Chap. VII.

C. R. KEHOE

LEDGER ACCOUNTS BEFORE CLOSING

Cash	Notes Receivable
\$400.00	\$200.00
Accounts Receivable	Merchandise Inventory
\$7,000.00	\$2,300.00

Furniture and Fixtures \$500.00	Accounts Payable \$1,500.00
C. R. Kehoe, Personal \$400.00	C. R. Kehoe, Capital \$8,580.00
Sales \$16,760.00	Prepaid Rentals Received \$840.00
Commissions Earned \$500.00	Purchases \$13,500.00
Wages \$2,340.00	Rent \$1,000.00
Advertising \$200.00	Office Supplies \$100.00
Prepaid Insurance \$240.00	

For recording the supplementary data considered in this illustration, the adjusting entries are as follows:

General Journal

19—					
June	30	(a) Merchandise Inventory	\$2,650 00		\$2,650 00
		Profit and Loss			
		To record the value of unsold goods on hand at the close of the fiscal period			
		(b) Insurance	80 00		
		Prepaid Insurance			80 00
		To charge expense with the proportion of prepaid insurance applicable to the period			
		(c) Office Supplies Inventory	40 00		
		Office Supplies			40 00
		To defer the cost of unused office supplies to the next period			
		(d) Prepaid Rentals Received	805 00		
		Rentals Earned			805 00
		To credit income with the amount of rental earned applicable to the present period			
		(e) Taxes	16 76		
		Reserve for Taxes			16 76
		To charge expense for the period and set up the liability for the amount of estimated sales tax			
		(f) Wages	75 00		
		Wages Accrued (Payable)			75 00
		To charge expense and set up liability for employees' wages due but unpaid at the close of the period			
		(g) Commissions Accrued (Receivable)	19 50		
		Commissions Earned			19 50
		To record the income earned but not received at the close of the period			

By referring to the work sheet at the close of Chap. VII, it will be seen that the adjusting entries are merely duplications of the information in the adjustment column in the work sheet. It is necessary to have a record in the journal, however, as authority for making the postings to the ledger accounts.

Posting the above adjusting entries affects the following accounts in the ledger:

Accounts Already Opened		New Accounts Required	
<u>Merchandise Inventory</u> 19— Jan. 1 \$2,300.00 June 30 2,650.00		<u>Profit and Loss</u> New Inventory \$2,650.00	
<u>Prepaid Insurance</u> \$240.00 (b) \$80.00		<u>Insurance</u> (b) \$80.00	
<u>Office Supplies</u> \$100.00 (c) \$40.00		<u>Office Supplies Inventory</u> (c) \$40.00	
<u>Prepaid Rentals Received</u> (d) \$805.00 \$840.00		<u>Rentals Earned</u> (d) \$805.00	
		<u>Taxes</u> (e) \$16.76	
		<u>Reserve for Taxes</u> (e) \$16.76	
<u>Wages</u> \$2,340.00 (f) 75.00		<u>Wages Accrued (Payable)</u> (f) \$75.00	
<u>Commissions Earned</u> \$500.00 (g) 19.50		<u>Commissions Accrued (Receivable)</u> (g) \$19.50	

6. Closing the Operating Accounts.

After the adjusting entries have been made and posted, the next step in closing is to transfer all operating accounts balances to the Profit and Loss account. This includes all income and expense accounts whether or not affected by any adjustment. The entries required in transferring the balances

are called "closing entries," and are made in the general journal.

Time is saved if all income accounts are closed as a group and all expense accounts are closed in another separate group. The operating accounts with credit balances are closed by making a compound entry, debiting all such accounts, and crediting the Profit and Loss account with the total of the balances. Such accounts represent incomes or decreases of expense.

The closing entry for the income accounts using the ledger accounts of C. R. Kehoe is shown below:

General Journal

19—						
June 30	Sales		\$16,760	00		
	Commissions Earned		519	50		
	Rentals Earned		805	00		
	Profit and Loss				\$18,084	50
	To close all income for the period to profit and loss					

The operating accounts with debit balances are closed by crediting all such accounts and debiting the Profit and Loss account with the total of the balances. These accounts represent expense items or decreases in income.

The compound closing entry for the expense accounts is as follows:

General Journal

19—						
June 30	Profit and Loss		\$19,571	76		
	Merchandise Inventory				\$ 2,300	00
	Purchases				13,500	00
	Wages				2,415	00
	Rent				1,000	00
	Advertising				200	00
	Office Supplies				60	00
	Insurance				80	00
	Taxes				16	76
	To close all expenses for the period into Profit and Loss account					

After the above closing entries have been posted, the ledger accounts appear as follows:

Cash		Notes Receivable	
\$400.00		\$200.00	
Accounts Receivable		Merchandise Inventory	
\$7,000.00		Jan. 1 \$2,300.00	To Profit and Loss \$2,300.00
		June 30 \$2,650.00	
Furniture and Fixtures		Accounts Payable	
\$500.00			\$1,500.00
C. R. Kehoe, Personal		C. R. Kehoe, Capital	
\$400.00			\$8,580.00
Sales		Prepaid Rentals Received	
To Profit and Loss \$16,760.00	\$16,760.00	\$305.00	\$340.00
Commissions Earned		Purchases	
To Profit and Loss \$519.50	\$500.00	\$13,500.00	To Profit and Loss \$13,500.00
	19.50		
\$519.50	\$519.50		
Wages		Rent	
\$2,340.00	To Profit and Loss \$2,415.00	\$1,000.00	To Profit and Loss \$1,000.00
75.00			
\$2,415.00	\$2,415.00		
Advertising		Office Supplies	
\$200.00	To Profit and Loss \$200.00	\$100.00	To Profit and Loss \$60.00
\$200.00	\$200.00		40.00
		\$100.00	\$100.00

Prepaid Insurance				Office Supplies Inventory			
	\$240.00			\$80.00		\$40.00	
Insurance				Taxes			
	\$80.00	To Profit and Loss	\$80.00	\$16.76	To Profit and Loss	\$16.76	
Rentals Earned				Reserve for Taxes			
To Profit and Loss	\$805.00		\$805.00			\$16.76	
Wages Accrued (Payable)				Commissions Earned (Receivable)			
			\$75.00			\$19.50	
Profit and Loss							
	Total Expense		\$19,571.76		New Inventory	\$ 2,650.00	
					Total Income	18,084.50	

After the closing entries covering expense and income have been posted to the Profit and Loss account, the balance represents the net profit or net loss for the fiscal period. If the credit total exceeds the debit total the income is greater than the expense, hence a net profit has resulted. If the debit total is greater than the credit total, the total expense has exceeded the total income; hence, a net loss for the period. The balance in the Profit and Loss account should always correspond with the amount of net profit or net loss shown in the completed work sheet and in the statement of income, profit and loss.

The amounts in the profit and loss column of the work sheet serve two purposes. First, they are used to prepare the statement of income, profit, and loss. In the second place, the same amounts are used to prepare the closing entries. Thus, the figures from the same source are used in both the income, profit and loss statement and the Profit and Loss account.

The Profit and Loss account, however, must not be confused with the income, profit and loss statement. While both the

account and the statement show the same net profit or net loss, they serve different purposes. The statement is prepared in regulation form from which analyses may be made by the engineer for the management. The Profit and Loss account is a summary of all the operating accounts for the purpose of a permanent record in the ledger of the net profit or net loss for each fiscal period. The Profit and Loss account may be likened to a funnel, into which enter all income and expense accounts, and out of which emerges the final net profit or net loss. The account is never used for any purpose other than a summary. It is used only at the close of the accounting period. No postings should ever be made to the account between any two closing dates.

7. Closing the Profit and Loss Account.

A credit balance in the Profit and Loss account signifies a net profit for the period. This means an increase in ownership from operation of the business. Continuing the same illustration already used in this chapter, the entry to close the Profit and Loss account is shown below:

General Journal

19—						
June 30	Profit and Loss			\$1,162 74		
	C. R. Kehoe, Capital				\$1,162 74	
	To close the net profit for the					
	fiscal period to owner's Capital					
	account					

Profit and Loss

	Total Expense	\$19,571 76		New Inventory	\$ 2,650 00
	Net Profit to Capital			Total Income	18,084 50
		1,162 74			
		<u>\$20,734 50</u>			<u>\$20,734 50</u>

A debit balance in the Profit and Loss account means an operating loss for the period with a corresponding decrease in ownership. The closing entry would be as follows, if the net loss for the period had been \$650.00.

General Journal

19—									
		Owner's Capital				\$650	00		
		Profit and Loss						\$650	00
		To close the net loss for the fiscal period to owner's Capital account							

8. Closing the Owner's Personal Account.

A debit balance in the Owner's Personal account denotes withdrawals of capital during the fiscal period. Obviously, the owner's Capital account would be overstated if the debit balance were not transferred to it from the Personal account. Using the illustration in this chapter again, the entry would be as follows:

General Journal

19—									
June 30		C. R. Kehoe, Capital				\$400	00		
		C. R. Kehoe, Personal						\$400	00
		To close the owner's withdrawals to the owner's Capital account							

9. Ruling Off the Operating Accounts.

After the closing entries have been posted, no balance exists in the operating accounts. To arrange these accounts so that the postings for the next fiscal period will be separate from the postings of the present period, the accounts are ruled off as follows:

Sales

19—					19—									
June 30		To Profit and Loss	J20		Jan. 31	Sales Journal	S17	\$	3,150	70				
				\$16,760	Feb. 28	" "	S20		2,800	22				
					Mar. 31	" "	S22		2,661	37				
					Apr. 30	" "	S25		2,542	85				
					May 31	" "	S99		2,630	05				
					June 30	" "	S32		2,974	81				
				\$16,760							\$16,760			

10. Preparing a Proof Trial Balance.

This is the final stage in each accounting cycle. After the balances in the operating accounts have been closed to the owner's Capital account, only the asset, liability, and owner-ship accounts remain open in the ledger.

The capital accounts in the ledger of the C. R. Kehoe illustration after closing are as follows:

Cash		Notes Receivable	
\$400.00		\$200.00	
Accounts Receivable		Merchandise Inventory	
\$7,000.00			June 30 To Profit and Loss \$2,300.00
		Jan. 1 \$2,300.00	
		June 30 \$2,650.00	
Furniture and Fixtures		Accounts Payable	
\$500.00			\$1,500.00
C. R. Kehoe, Personal		C. R. Kehoe, Capital	
19— \$400 00	To Capital \$400.00	June, 30 Personal \$ 400.00	Jan. 1 Balance \$8,580.00
		June 30 Balance 9,342.74	June 30 Profit 1,162.74
		\$9,742.74	\$9,742.74
			June 30 Balance \$9,342.74
Office Supplies Inventory		Prepaid Rentals Received	
\$40.00		19— \$805.00	\$840.00
		June 30 Balance 35.00	
		\$840.00	\$840.00
			June 30 Balance \$35.00

Prepaid Insurance			Reserve for Taxes		
	\$240.00	June 30 Insurance	\$ 80.00		
		June 30 Balance	160.00		
June 30 Balance	\$160.00			June 30	\$16.76
Wages Accrued (Payable)			Commissions Accrued (Receivable)		
		June 30	\$75.00	June 30	\$19.50

Any capital account with more than one debit or credit posting should be balanced and ruled as illustrated in the Prepaid Insurance account. By so doing the same figure is shown in the account which appears in the balance sheet column of the work sheet and in the balance sheet itself.

The purpose of the proof trial balance is to prove that the ledger is in balance after the process of closing has taken place. It should be prepared before any transactions are recorded which are applicable to the next fiscal period. The proof trial balance has the same form as the trial balance before closing. A proof trial balance of the C. R. Kehoe ledger is taken from the preceding accounts as listed below:

FORM 37
PROOF TRIAL BALANCE
C. R. KEHOE
June 30, 19—

Cash.....	\$ 400.00	
Notes Receivable.....	200.00	
Accounts Receivable.....	7,000.00	
Merchandise Inventory.....	2,650.00	
Furniture and Fixtures.....	500.00	
Accounts Payable.....		\$ 1,500.00
C. R. Kehoe, Capital.....		9,342.74
Office Supplies Inventory.....	40.00	
Prepaid Rentals Received.....		35.00
Prepaid Insurance.....	160.00	
Reserve for Taxes.....		16.76
Wages Accrued.....		75.00
Commissions Accrued.....	19.50	
	<u>\$10,969.50</u>	<u>\$10,969.50</u>

The proof trial balance portrays the existence of the ownership equation just the same as the balance sheet. This is true because all income and expense items have been closed into the owner's Capital account. The proof or post-closing trial balance differs from the balance sheet only as to form and purpose; the accounts and amounts are identical.

Questions

1. Enumerate the major activities taking place from the beginning through to the close of the fiscal period.
2. What is meant by "closing the operating accounts?"
3. How frequently are the operating accounts closed?
4. Is it necessary to close the operating accounts in order to ascertain the profit or loss from operations?
5. What are the purposes of closing the operating accounts?
6. Enumerate the steps involved in closing the operating accounts.
7. What part is played by the adjusting journal entries in closing the operating accounts?
8. What is the procedure in closing the income accounts? The expense accounts?
9. What is the function of the Profit and Loss account?
10. After all operating accounts are closed, will there be a debit or a credit balance in the Profit and Loss account?
11. What entry is necessary to close the Profit and Loss account?
12. Contrast the Profit and Loss account with the income, profit and loss statement.
13. What is the relationship between the Profit and Loss account and the profit and loss column in the work sheet?
14. What is the purpose of a proof trial balance?
15. Compare the proof trial balance with the balance sheet.

PART II

BASIC VALUATION PRINCIPLES

CHAPTER XII

CAPITAL VERSUS OPERATING EXPENDITURES

1. The Distinction between Capital and Operating Accounts.

The twofold classification of accounts again comes to the front for consideration. The classification has been considered already as a basis for sorting the proper accounts to prepare the balance sheet and the statement of income, profit and loss. The capital accounts are used in the preparation of the balance sheet. They are the assets, liabilities, and ownership which set forth the salient facts in regard to the financial condition of the business. The income, profit and loss statement is prepared from the operating accounts. These accounts record the transactions, showing the revenue received as well as the expenses incurred in obtaining the revenue.

The distinction between capital and operating accounts is sometimes referred to as the difference between capital and revenue accounts. On the books there is no difference in appearance between the two types of accounts, with the exception as to the name of the account. But a sharp distinction must be made between the two groups at all times in regard to their nature, when accounting processes are involved. These processes are divided into two periods, namely, when transactions are journalized and when financial statements are prepared.

It is tremendously important to realize and understand the distinction between a capital and a revenue expenditure at the time the transaction is journalized in a book of original entry. There is a fundamental difference between an expenditure for the purchase of an asset and an expenditure in connection with the maintenance of the same asset. If the importance of the distinction is realized, the proper account

will be charged with the cost at the time of the transaction. Little danger lurks, then, in getting the item in the statement in which it does not properly belong. A transaction correctly handled in the beginning offers little or no trouble at the close of the accounting period. When financial statements are prepared, it is always important, however, to have knowledge of the fact that the proper items have been incorporated in the balance sheet and in the income, profit and loss statement.

The result of charging capital or operating accounts erroneously is to misstate the net profit or net loss for the period. Obviously, such an error would be reflected in the ownership account. If a capital expenditure is actually made and it is charged to an expense account, the effect is to understate the asset values and profits, while expense is overstated. If an operating expenditure is actually made and it is charged to an asset account, asset values and profits are overstated while the expenses are understated.

2. Capital and Operating Expenditures.

Decisions must be made frequently by the engineer pertaining to the transactions the nature of which makes it quite difficult to say whether a capital or an operating account should be charged. Certain well-defined rules may be stated to aid in properly classifying the expenditure. Even with a knowledge of these rules, however, proper classification may be difficult to determine. For an example use the following illustration: A new delivery truck was purchased in February. In April of the same year the name of firm, address, and other advertising matter was painted on the truck at a cost of \$50. Should this cost be treated as an operating expense or should it be capitalized? While it is true that the firm will receive the benefit from the advertising as long as it uses the truck, has such advertising actually increased the value of the truck? Many large business concerns combat such dilemmas by setting an arbitrary figure above which debatable items are capitalized and below which they are treated as operating expenditures. In case of absolute doubt as to the proper classification of the expenditure, it is better to charge an operating account instead of a capital account. By so doing conservative accounting practise is

adhered to; profits will be understated rather than overstated.

Capital expenditures are those expenditures which increase the relatively permanent values or the productivity of an asset. Expenditures made for items which will be in use or possess value for a period of time longer than one accounting period should be capitalized. When a piece of machinery is purchased it will last, normally, more than one year. Its cost value is said to be capitalized, and it is termed a "fixed asset." Through the process of depreciation, the cost is charged into the operating expenses during the years that it remains in use. If the accounting period or fiscal year was 5 years in length, and the machine had an estimated life not exceeding 5 years, then the expenditure could be considered as an operating or revenue expenditure. As accounting or fiscal periods never exceed 12 months, however, any expenditure made which creates a value giving benefit for a longer period of time must be considered as a capital expenditure. Capital expenditures may be classified as additions, betterments, extensions, improvements, replacements, and renewals.

Revenue expenditures are those expenditures which do not increase the value or productivity of any fixed asset. In contrast to capital expenditures, revenue expenditures represent current operating costs, which are also known as "operating expenditures." Expenditures of this type confer a benefit to the business during only one fiscal period. If the operating expenditures conferred a benefit to more than one accounting period, the cost would be capitalized. This is frequently the case with certain expense items such as expenditures made for insurance, advertising literature, fuel, factory and office supplies, etc. If it can be ascertained at the time the expenditure is made that it will benefit more than one fiscal period, then the expenditure should be charged to a "prepaid" expense account. Salaries, wages, taxes, insurance, fuel, power, and rent are illustrative of the operating expenditures. Such expenditures are sometimes termed "revenue" expenditures because they are costs of obtaining the revenue or income. Expenditures for repairs, maintenance, costs of production, distribution, and administration are also treated as operating expenditures. The last three types of expenditures are described in Part IV.

3. Additions and Extensions.

Expenditures for additions and extensions are capital in nature. Such expenditures give the already existing fixed asset values an added physical value which they did not previously possess. The additions represent the value expended for capital assets which have not replaced any asset already in existence in the business. Additions may be made to land, buildings, machinery, or any other type of equipment.

4. Improvements and Betterments.

Improvements and betterments to fixed capital assets represent capital charges. Such expenditures are made for the purpose of improving the physical value or the productivity of the fixed assets. The application of safety devices to machinery or other equipment illustrates an improvement. The improvement safeguards the workmen from injury as long as the fixed asset is in use; therefore, the cost should be capitalized. The application of some patented device to a piece of machinery would be classed as a betterment, since it will increase or facilitate production.

5. Replacements.

When a fixed asset has become obsolete or depreciated to a point where it is no longer an economical productive agent, and a new unit is purchased to take its place, a replacement has been made. Replacements represent capital expenditures. In Chap. VIII several illustrations of journal entries were shown when depreciated assets are replaced by new units.

Replacements constitute an exchange of units which are substantially equal in value. If the new unit, because of increased productivity, has a much higher cost value than the one it replaced, the additional cost is capitalized as a betterment. When a fixed asset is replaced, the cost of the replacement is capitalized regardless of whether its cost is greater or less than the original cost of the asset being replaced.

Small parts of an individual unit of equipment often must be replaced several times before it is necessary to replace the complete unit. Expenditures of this type do not represent capital outlay. They are to be considered as repairs or maintenance.

6. Renewals.

Renewals are capital expenditures usually made in connection with intangible assets. The costs of obtaining extended franchises, copyrights, etc., are considered as renewal costs from a technical accounting viewpoint. Renewals should not be confused with replacements or repairs. While it is true that a fixed asset may be considered as being renewed when it replaces a complete existing unit, accounting terminology, strictly applied, classifies the new unit received in the business as a *replacement*. When a new cam is placed in a machine or a new carburetor is installed in an automobile, the application may be loosely spoken of as a renewal, but strictly speaking it is a repair. The application of either item does not increase the original estimated life of the asset to any material degree; therefore, the cost should be classified as a repair.

7. Repair

Repairs are treated as operating expenditures. They do not increase the value of the asset upon which they are made. Repairs are necessary to keep buildings and equipment in condition to operate efficiently. Through wear and tear, lapse of time, or accident, certain parts of any capital asset must be renewed from time to time. The expenditures involved in endeavoring to keep physical assets in the maximum degree of efficiency during their life are considered repairs. Two general methods are practised in charging repairs as a revenue expenditure. One way is to charge the cost of repairs at the time they are actually made. The other method is to anticipate the annual charge and cost each month with a proportionate part of the cost. Chapter IX describes the method of handling the Repairs Reserve account.

Another classification of repairs is sometimes made, known as "extraordinary repairs." Repairs of this nature tend to lengthen the original estimated life of the asset affected. While some accountants advocate charging the Depreciation Reserve account for the cost of extraordinary repairs, another practise appears to have more merit. The Depreciation Reserve account should be charged only when an asset is replaced, and then only for that amount of depreciation which has been credited to the Reserve account which is applicable

to the asset being replaced. Orthodox accounting practise would seem to be more strictly adhered to if the cost of extraordinary repairs were capitalized and charged off over the remaining life of the asset involved.

8. Maintenance.

Maintenance constitutes an operating expense. It is a broader term than repairs and usually covers the entire operating cost for some particular activity, service, or group of equipment. Thus, there may be maintenance accounts for real estate (company houses owned by a coal mining concern); machine shop maintenance; and maintenance of plant production centers. Maintenance includes repairs, cost of supplies, repairmen's wages, oiling, and all other costs of the upkeep of certain specific fixed assets. Specifically, the account, Boiler Maintenance, may include such costs as material and labor for repairs, cost of washing out the boiler periodically, and inspection costs.

9. Capitalized Operating Expenditures.

Certain expenditures arise from time to time the nature of which characterizes them as strictly operating expenditures from two points of view. The expenditure neither increases the value of an asset, nor does it increase the productivity of an asset. Regardless of these facts, certain pure expense items are capitalized. The reason for capitalizing these expense items arises when the expenditure benefits more than one accounting period. If this is the case, the entire cost is not charged as a cost of operations in the period in which the expense is incurred. The cost is set up as a deferred charge to operations, and a portion is charged off over a period of years, the number being determined by the facts involved. Capitalizing an operating expenditure, thus, is equivalent to treating an expense as a temporary asset. Some expenditures coming under this classification are the following:

1. Cost of moving business from one location to another place.
2. Cost of rearrangement of plant equipment to facilitate production flow.
3. Cost of making repairs and improvements on landlord's property.
4. Cost of experimental and development expenses.

Some other items which neither increase asset values nor represent operating expenditures, which are capitalized to be treated as deferred charges, are as listed below:

1. Organization expenses of a corporation.
2. Undepreciated cost of fixed assets which have become obsolete.

10. Aids in Differentiating between Capital and Operating Expenditures.

Certain tests may be applied which will help to determine the nature of the expenditure.

1. If the expenditure is one that increases the relatively permanent values in the business, it is a proper charge to capitalize.
2. If the expenditure in connection with the asset will increase the productivity or output, it is a proper charge to capitalize.
3. If the expenditure incurred has been merely to maintain an asset at its maximum degree of efficiency, it is a proper charge to operations.
4. If the value received from the expenditure does not extend over more than one accounting period, usually one year, it should be considered as an operating expenditure.
5. If the expenditure is in the nature of an operating expense, but circumstances warrant spreading the expense over a period of 2 or more years, then the expense should be capitalized and considered as a deferred charge to operations.

Questions

1. What is the importance of being able to distinguish between a capital account and an operating account?
2. What is meant by the term "capitalizing an expenditure?"
3. What is considered an operating expenditure?
4. What condition results if a capital expenditure is treated as an operating expenditure?
5. Describe what is meant by an addition.
6. Contrast an addition with an improvement or a betterment.
7. Explain what is meant by a replacement.
8. What is a renewal?
9. Repairs are considered what type of an expenditure? Why?
10. Contrast ordinary repairs with extraordinary repairs.
11. Describe what is meant by maintenance.
12. When is it considered proper to capitalize an operating expenditure?
13. State the various tests which may be used to determine the difference between a capital and an operating expenditure.

CHAPTER XIII

THE VALUATION OF CURRENT ASSETS

1. The Importance of Current Asset Valuation.

The principles of valuation pertaining to current assets are important because they affect profits. As the inventories and accounts receivable are valued, a direct reflection is evident in the final net profit or net loss. It may be clearly seen, therefore, that unwarranted overstatement or understatement of current asset values vitiates operating results. The engineer is interested in current asset valuation since it relates to operating results. Especially is he interested in inventory valuation, because of its direct influence upon gross and net profits.

2. The Distinction between Current and Fixed Assets.

The distinction between current and fixed assets has been dwelt upon already, but it is important to emphasize it again.

A current asset represents any personal property owned by the business in the form of cash, or that which *will* be converted into cash within a relatively short period of time. This usually means that the conversion into cash will take place at least within one year from the date the balance sheet is prepared.

A fixed asset represents either personal or real property owned by the business, which has been acquired for the purpose of facilitating the operation of the business and without which the business could not function properly. Fixed assets are not purchased for immediate resale, although they may be sold, exchanged, or scrapped after their period of usefulness to the business has ceased.

3. A Current Asset Classification.

The following classification, while not complete, gives the most common groups of current assets found in the majority of businesses.

CHART 5.—CLASSIFICATION OF CURRENT ASSETS

1. Liquidating.....	a. Cash b. Notes receivable c. Accounts receivable d. Accruals receivable
2. Working.....	a. Inventory raw materials b. Inventory work in process c. Inventory finished goods d. Inventory finished parts e. Inventory consigned goods
3. Temporary investments	a. Readily marketable stocks b. Readily marketable bonds c. Readily marketable mortgages
4. Advances.....	a. On purchase contracts b. To traveling representatives c. To officers and employees d. To subsidiaries
5. Special funds.....	a. Petty cash fund b. Change fund c. Branch working fund

The liquidating assets are made up of accounts receivable, notes receivable, and accruals receivable. As these assets are converted into cash, the proceeds are used to settle items of indebtedness as for example, payrolls, accounts payable, and taxes.

The working assets are the inventories which go to make up the saleable product. They cover raw materials, work in process, finished parts, finished goods, and include even goods out on consignment.

Temporary investments constitute a group of readily marketable securities in which surplus cash has been invested. Some types of business establishments deal in the manufacture and sale of seasonable commodities. During off-season production the cash not needed for current operations is invested in stocks, bonds, or mortgages which may be sold on the market at any time.

The current assets listed above comprise the working capital of the business, as described in Chap. X. For credit purposes, temporary investments are usually not included as a quick asset. "Quick assets" is a more restricted term than "current assets" and generally refers to assets which can be converted into cash without any appreciable loss. Securities may be readily marketable, yet the market may be

down when it is desired to dispose of them, resulting in a loss if sold.

Advances are treated as current assets because they are cash items. Advances may or may not be considered as working capital, dependent upon the point of view. From the standpoint of production, advances may be considered as working capital, because they are made for the purpose of facilitating manufacturing activities. Credit agencies are sometimes loathe to consider advances as a part of working capital, especially when advances are made to officers, employees, and subsidiary companies. This attitude prevails because the two latter types really represent loans receivable, and frequently remain on the books for an indefinite period of time instead of being converted into cash within a relatively short period.

Special funds are of two types, namely, current and relatively permanent. Special funds of the first type are for petty cash, store change, or branch working funds. All three of these funds are considered as working capital, and appear on the balance sheet immediately following the general cash. Relatively permanent special funds are classified under the fixed asset group.

How to value accurately the various current assets must now be considered. Errors in the valuation of these assets can creep in so easily, errors which will affect profits and losses, that the greatest of care must be exercised by engineers and accountants in valuation procedure. Let us take up the valuation of each of the current assets in detail.

a. Cash.

At first thought it would seem that there would be no valuation problem in connection with cash. Usually there is not, unless the cash on hand includes "I. O. U's" from the officers and employees. Such items should always be considered as accounts receivable from officers and employees; never as cash. The item of cash in the balance sheet should represent only currency, coin, money orders, bank drafts, and checks on hand or in the bank.

b. Notes Receivable.

The chief principle of valuation in connection with notes receivable is to make sure that the amount includes only

unmatured notes. If a note is not paid at maturity it is said to be dishonored. As such, it ceases to be a bona-fide asset as a note receivable, and should be transferred to the customer's account, together with any accrued interest and protest fees. In this manner a valuable credit reference is set up in the customer's account for future use. A dishonored note is held in the customer's account until payment is received or until it is charged off as an uncollectible account. Only the notes receivable at face value unmatured should appear in the balance sheet, and any discounted notes receivable should be deducted from the total of notes receivable unmatured.

c. Accounts Receivable.

When goods are sold on credit terms, it is inevitable that losses will occur from customers' accounts. Through bankruptcy, deliberate fraud, or other reason, some customers will never pay the amounts they owe. The amount of accounts receivable shown in any balance sheet will not be the amount of cash ultimately collected; therefore, the value placed on them can be only an estimate. The value of the estimated good accounts receivable is determined after deducting the amount set up as a credit in the account, Reserve for Uncollectible Accounts. Amounts which have been due from customers for a period of over one year are usually written off or are charged against the reserve for uncollectible accounts.

d. Accruals Receivable.

There is no particular problem pertaining to this type of asset. Commissions, rents, interest, etc., owing to the business may be computed with accuracy when all facts are known. Their value appears on the balance sheet in accordance with the amount due at the closing date.

e. Raw Materials Inventory.

Inventory valuation is one of the most important principles with which the accountant and engineer have to deal. It is important because of the investment involved, and because of its direct relation to profits.

The investment in raw materials should be kept at a minimum, while at the same time production must not be handicapped by shortages. If a too large stock of raw materials

is carried, some of the items may become obsolete. This makes it necessary to scrap the material before it can be used. Again, the investment in raw materials should be kept as low as possible without jeopardizing production, in order that a higher rate of stock turnover may result. The larger the inventory turnover the greater is the return upon a given capital invested. One of the fundamental principles of management is to buy raw materials on the basis of maintaining one month's supply on hand in advance of the manufacturing requirements. The only deviations which should alter this rule are in event of an anticipated market shortage or an anticipated rise in price. The practise is becoming more common to order a year's supply of certain stock items to obtain favorable prices, the liability for the goods arising only as release orders for shipments of specified amounts are made by the buyer.

The volume of raw materials on hand may affect indirectly the *value* of the inventory. If excessive stocks are acquired and obsolescence occurs, or market prices decline, then it is not considered within the limits of conservative accounting practise to value the inventory at cost. Cost or market, whichever is the lower, is the valuation principle generally followed. If there is a variation between the cost value and the market value of raw materials, however, the cost figure should be used as the closing inventory value in order to prevent the cost of production and net profit from being overstated. The decrease in inventory value should be handled as a charge directly to Profit and Loss account and a credit to the Raw Material Inventory account (see Chap. XXV for illustration). Expected future declines in the cost value of raw materials, which have not actually taken place, should be provided for by a surplus reserve, as described in Chap. IX.

f. Work in Process Inventory.

The work in process inventory probably offers the least problem of all inventories in respect to valuation in a going concern having facilities for adequate cost findings. There are three main principles to remember: first, the raw materials charged into production should be priced correctly; second, the direct labor charges to work in process should be accurate; third, the overhead expense charges should not

include any items which are not strictly of a manufacturing nature. If these three principles are complied with, the work in process inventory will be stated at cost, which is generally the value used. The span of time required to process goods is usually so short that no appreciable difference exists between the cost of the raw material charged to production and its present market value.

g. Finished Goods Inventory.

Finished goods inventory may be composed of either merchandise purchased for resale or manufactured goods. If the finished goods inventory is composed of units purchased, the cost value is used for financial statement purposes unless market value happens to be lower, in which case it is used. A finished goods inventory composed of units produced by a manufacturing plant uses the unit cost of production in valuing the inventory, except where the market value of the goods is lower.

An illustration will show why it is more conservative to make use of cost or market, whichever is the lower inventory value, when preparing the financial statements:

	<u>Case 1</u>	<u>Case 2</u>
Net Sales.....	\$116,989	\$116,989
Cost of Sales:		
Inventory, Jan. 1, 19—....	\$17,950	\$17,950
Net Purchases.....	73,810	73,810
Goods Available for Sale...	<u>\$91,760</u>	<u>\$91,760</u>
Inventory, Dec. 31, 19—...	16,893 (cost	14,026 (market
	value)	value)
Cost of Sales.....	<u>74,867</u>	<u>77,734</u>
Gross Profit.....	\$ 42,122	\$ 39,255
Selling and Administrative		
Expenses.....	<u>36,019</u>	<u>36,019</u>
Net Profit.....	<u>\$ 6,103</u>	<u>\$ 3,236</u>

It is seen that net profits are less when the closing inventory of lesser value is used. And this is rightly so, because the loss should be taken in the year when the decline in market value actually occurred. There is a law in economics which holds that a decline in selling prices usually follows a decline in wholesale prices. This means that sales for the following period, using the above illustration, will reflect the market decline through a lower selling price per unit. If the

cost value of the closing inventory is used when the market value is lower, the net profit is overstated for the year in which the decline occurred and understated in the following year. This is clearly shown in the following illustration:

	Case 1a	Case 2a
Net Sales.....	\$110,608	\$110,608
Cost of Sales:		
Inventory, Jan. 1, 19—	\$16,893 (cost value)	\$14,026 (market value)
Purchases.....	69,590	69,590
Goods Available for Sale...	\$86,483	\$83,616
Inventory, Dec. 31, 19—...	15,291 (cost value)	15,291 (cost value)
Cost of Sales.....	\$ 71,192	68,325
Gross Profit.....	\$ 39,416	\$ 42,283
Selling and Administrative Expenses.....	36,847	36,847
Net Profit.....	\$ 2,569	\$5,436

Over the period of the two years the net profit will be adjusted even though the principle of using cost or market value, whichever the lower, is not adhered to in the year in which the decline occurred. This fact is shown by adding the net profits for the two years under cases 1 and 1a, also under cases 2 and 2a above. *But the important thing is to state the net profit accurately in each year.* Besides conforming with the above principles and thus with conservative accounting practice, accuracy of net profit statement for each specific year conforms with Federal Income Tax requirements.

h. Finished Parts Inventory.

Manufacturing concerns frequently make some of the smaller parts used in the production of their commodities. Where this occurs, an order is prepared within the plant calling for the production of so many units of the finished part. Accurate cost of the total number produced not only shows whether it is more profitable to make them or to buy them in the open market, but it also furnishes a cost figure to use for inventory valuation. Finished parts, like other inventories, ordinarily should be priced at cost or market whichever is the lower.

i. Consigned Goods Inventory.

Manufacturing concerns sometimes market their products by shipping the goods to a commission broker. Such a ship-

ment is termed a "consignment." The broker or jobber acts as the agent of the shipper or consignor, and disposes of the goods if he can. Any goods which the agent cannot sell are returned to the consignor. When goods are consigned, the title to them does not pass to the consignee with delivery, as is the case with an ordinary sale. The value of the unsold goods in the hands of any consignee, therefore, represents a current asset of the consignor.

At the time of closing, the balance sheet should reflect the unsold consigned goods in the hands of all the consignees at cost or market, whichever is the lower. Reports received from the consignees, termed "account sales," show the amount of sales made and the inventory on hand. Account sales are rendered by the consignee after all goods on the consignment have been sold, and at the close of each monthly period of the consignor, in order that the latter will know the inventory value.

4. Exceptional Methods of Valuing Inventories.

From the foregoing it must not be inferred that either cost, or cost or market whichever is the lower, are the only methods of valuing inventories. While they are the *most* common methods, others may be employed in exceptional cases. Any deviation should be clearly shown, however, if the inventory value is stated in the financial statements at any other value than cost, or cost or market, whichever is the lower.

Robert H. Montgomery, an authority on accounting, describes exceptional inventory valuation methods in the following manner:

1. When is it proper to value inventories at less than either cost or market? . . . The selection of a low, fixed base price for raw materials is a practice which was adopted many years ago and is now in use by some of the most successful and far-seeing business men. (In most cases the result is reached by valuing inventories at cost or market and creating a special account to record variations between that valuation and the fixed base price.) There must be some direct connection between good business practice and good accounting practice . . . Good business concerns have good cost systems, but when market conditions change it may be folly to expect to realize cost. Good accounting practice must not be confused with good accounting methods. The latter will produce accurate costs by

means which are largely mechanical and inflexible. Good accounting practice is based on opinion and therefore is flexible.¹

2. When is it proper to value an inventory at cost, if that is higher than replacement cost? . . . In the case of manufacturing concerns, when replacement cost is less than the actual or original cost of the goods in the inventory, the inventory should be reduced to replacement cost. When reproduction cost is more than apparent market or replacement prices, it might appear, and it is urged that there is some justification for valuing the inventory at reproduction cost when it is believed that market prices are unduly depressed, that considerable quantities cannot be purchased at the apparent market prices, and that the inexorable law of supply and demand will in time raise the market prices to something above cost of production.²

3. When is it proper to value an inventory at market, if market is higher than cost? . . . If there is no intention to write down values arbitrarily, and if balance sheets purport to exhibit actual values, as nearly as can be determined, of all assets shown therein, it is obvious that the rule of "cost or market, whichever is lower" renders impossible a true and accurate balance sheet whenever market values substantially exceed cost. It is possible to be conservative and at the same time prepare a balance sheet which will disclose—not hide—favorable changes in market values.³

4. When is it proper to value an inventory at selling prices? . . . In every case when inventory items are carried on a balance sheet without explanatory comment, those who use the balance sheet are justified in assuming that no profit whatever appears in the item, and that, if there has been a decline in values, the decline has been fully reflected. But if the inventory is clearly shown to be at selling prices, the chief cause for criticism has been removed. There may be anticipation of profits but there is no deception. If there is a good reason for this basis of value, the other objections are likewise removed.⁴

5. Temporary Investments.

Investments of this type should be valued at cost. No attempt should be made to reflect on the books the fluctuations in the market value of the securities. By showing the securities at cost, the net gain or net loss arising from their sale may be easily calculated. Until they are sold, no gain or loss has been realized, and an attempt to record the present

¹ "Auditing—Theory and Practice," 4th Rev. Ed., p. 181.

² "Auditing—Theory and Practice," 4th Rev. Ed., p. 189.

³ "Auditing—Theory and Practice," 4th Rev. Ed., p. 190.

⁴ "Auditing—Theory and Practice," 4th Rev. Ed., p. 193.

market value on the books would be to show a gain or a loss which has not actually occurred.

At the time of preparing the balance sheet, if the market value of the securities varies to a material degree from the cost, a notation may be made to call attention to the fact. An asterisk may be placed preceding the security cost value which calls attention to a footnote in the balance sheet, explaining what the market value is at the time.

6. Advances.

The chief problem of valuation in connection with advances is to know whether or not the stated amounts actually represent asset values. Advances on purchase contracts can seldom be questioned as a working capital value. Advances to subsidiary companies usually represent working capital. Occasionally the advance may not be repaid for a number of years after it has been made. If the advance is made for a long period of time, that is for several years, it is then considered as a permanent investment.

Advances to traveling representatives should reflect the net amount unexpended for expenses. At the time of closing, expense reports should show the total unexpended advances, which rightly represent a current asset at that date.

An advances to officers or employees while theoretically a current asset actually proves to be a long-term loan in many cases. It is a current asset in that it represents a receivable, but again it is not a current asset or a part of working capital, if the advance remains unpaid year after year. The practise of carrying unpaid advances for a long period of time reflects poor financial management.

7. Special Funds.

There is no peculiar problem of valuation if the fund is composed of cash only. And this is the case with all funds classified under the current asset group. The chief principle is to be certain that the value stated in the balance sheet represents cash only. That such condition may not exist may be understood clearly when the nature of the petty cash fund is revealed.

Every business establishment has many small cash payments to make for such items as street car fares, supper money

to office employees, donations to charitable institutions, parcel-post charges, and other expenses of a minor or petty nature. To avoid writing checks for small amounts, a petty cash fund is created. From this fund the small expense items are paid. The best way to safeguard petty cash is to make one person responsible for authorizing the payment by filling out a petty cash voucher directing payment to be made, and another party responsible for handling the payments. When the petty cash fund is decreased to low ebb by payments, the vouchers are sorted as to the name of the account charged when payments were made. This permits the correct entry to be made in the voucher register when the petty cash fund is reimbursed for the amount of the total vouchers previously paid. Before a balance sheet is prepared, the petty cash vouchers should be recorded on the books as expense items, so that the petty cash fund will reflect only actual cash on hand.

8. Deferred Charges Versus Prepaid Expenses.

There is a group of assets in which there are differences of opinion as to their classification as a current asset. These assets are the deferred charges and the prepaid expenses.

These two classes of balance-sheet items are sometimes considered as current assets, although the general consensus of opinion excludes them from working capital. The exclusion from the current asset group is based upon the fact that the items under these two captions could not be converted into cash except at an extraordinary loss. In the case of deferred charges, no conversion of the expense item into cash is possible.

While prepaid expense items are frequently listed under the heading of deferred charges on the balance sheet, there is a technical difference in the nature of the two captions.

Deferred charges are costs or expenses under some specific account title, the total amount of which is not properly chargeable against operations of the period in which the expenditures were incurred. Expenditures for corporate organization expense, mortgage expense, bond discount, tenant improvements on leased property, moving and machinery relocation, etc., the value of which should be spread over several or many years, are illustrations of a deferred charge. Each year a predetermined pro-rata portion is amortized, that is, an

expense account is charged, or surplus in the instance of corporate organization expense, and a credit is made to the account recording the deferred charge. Deferred expense items in addition to having no market value are also distinctive in that their value is usually intangible. The unamortized cost is the value reflected in the balance sheet.

Prepaid expenses are likewise costs or expenses under some specific account title, which are not properly chargeable against operations of the period in which they were incurred. Prepaid expenses, however, embody an entirely different type of expense items. Insurance premiums unexpired, prepaid interest, inventories of expense supplies, etc., the unused value of which will be charged to expense generally within one or two years time, creates the group known as "prepaid expenses." Prepaid expenses constitute a class of items closely bordering on the current asset group. They may be rightfully considered a part of the working capital from a production viewpoint, since they represent cash tied up in service or supplies paid for in advance. It is possible to realize on unexpired insurance and expense supplies, but the realization is usually accompanied by a material loss. The fact that they could not be realized upon except at a large loss in comparison with their cost, prohibits the credit agencies from treating them as working capital items. The unexpired or unused portion of such expense items at cost, is the value used in the balance sheet.

Questions

1. State the importance of current asset valuation.
2. Differentiate between a current asset and a fixed asset.
3. What is meant by "liquidating assets?"
4. What is included under the heading of working assets?
5. Describe what is meant by a "temporary investment."
6. What is the nature of an advance?
7. What special funds are treated as current assets?
8. What are the pertinent principles of valuation pertaining to the following assets:
 - a. Cash?
 - b. Notes Receivable?
 - c. Accounts Receivable?
 - d. Accruals Receivable?
9. Discuss the importance of keeping the investment in inventories at a minimum.

10. Why is it considered conservative accounting practise to show inventory values at cost or market, whichever is the lower?

11. In what manner does a finished parts inventory differ from a finished goods inventory?

12. What is meant by a "consigned goods inventory?"

13. What are some exceptional methods of inventory valuation, and under what conditions would it be proper to apply them?

14. Differentiate between a deferred charge and a prepaid expense.

CHAPTER XIV

THE VALUATION OF FIXED ASSETS

1. The Importance of Fixed Asset Valuation.

The principles of fixed asset valuation are very far reaching in their importance. Valuation principles covering fixed assets affect our whole economic fabric. The prices that are paid for commodities, such as food, clothing, shelter, fuel, power, and transportation are influenced by valuation. Particularly do the principles of valuation enter into the public-utility field. The rate the consumer pays for gas, power, and transportation is directly determined by valuation of fixed property involved. This is evident because the public utility is, by law, entitled to a fair return on its capital invested after paying all operating costs. Since depreciation of plant property and equipment constitutes an operating cost, the rates charged for these commodities are directly tied up with the values placed upon the fixed assets. The engineer naturally must play an important part in placing valuation on property and equipment for rate-making purposes.

The engineer's services in valuation are likewise indispensable in condemnation proceedings for the proposed sale or purchase of property, appraisal for setting fair values preceding the floating of a bond issue, and for verifying depreciation rates.

Adherence to the proper principles of valuation on fixed assets also insures accurate values in the financial statements. It is with this in mind that the principles of valuation are set forth pertaining to the many types of fixed assets.

2. Fixed Asset Classification.

The following table classifies the more common kinds of fixed assets:

CHART 6.—CLASSIFICATION OF FIXED ASSETS

A. Tangible...	1. Special funds....	a. Sinking funds
		b. Redemption funds
		c. Replacement funds
		d. Contingency funds
	2. Permanent investments....	a. Advances to subsidiaries
		b. Bonds of subsidiaries
		c. Capital stock of subsidiaries
		d. Real-estate holdings
	3. Construction in process.....	a. Machinery
		b. Buildings
		c. Dies and tools
		d. Jigs and templates
		e. Other equipment
	4. Plant equipment and other property.....	a. Land
		b. Buildings
		c. Machinery
d. Shafting and belting		
e. Small tools		
f. Jigs and templates		
g. Dies and molds		
h. Patterns and drawings		
i. Containers		
j. Furniture and fixtures		
k. Automobiles		
l. Livestock		
B. Capitalized Expenses.....		m. Wagons and harness
C. Intangible..	1. Ownership with legal rights....	a. Experimental and research
		b. Development
		a. Patents
		b. Copyrights
		c. Trade marks
		d. Trade formulae
	2. Ownership.....	e. Franchises
		f. Leaseholds
		a. Goodwill

3. Tangible versus Intangible Fixed Assets.

Note that the fixed assets are divided into the tangibles and intangibles. Tangible assets are those items of property which possess physical existence. Intangible assets, in contrast, represent rights owned by virtue of law and favorable position and possess no physical existence.

Special funds classed as fixed assets are distinctly different from special funds in the current asset group. Sinking, redemption, replacement, and contingency funds represent

deposits set aside for some specific purpose. The purpose for which the fund is created may be such that the fund will not be utilized until the expiration of many years. Such is the case with bond redemption and replacement funds. Although the fund may increase from year to year, it will remain intact for a number of years; hence, their classification as a fixed asset. These funds are generally itemized under a separate and specific title of "special funds" on the balance sheet.

Permanent investments should be listed in the balance sheet under a separate and specific heading. Quite often they represent investment in subsidiary companies or other possessions for the purpose of obtaining property or operating control.

Equipment in the process of construction is considered as an asset, appearing on the balance sheet. Its value at any time is the sum of the expenditures made up to the date of the balance sheet. Upon completion of the equipment, the cost is transferred to the regular equipment account; that is, the cost of the equipment is capitalized.

Legal advantages and possessions comprise a group of rights which may be owned by a business. These rights confer a definite advantage upon the owner. They are generally listed in the balance sheet under the specific heading of "intangible assets."

Certain economic possessions such as location, trade name, quality of product handled, reputation for service and personnel, as well as owning patents, trade marks, and franchises, combine to create in a going concern what is known as "goodwill." This item is usually considered one of the strongest and most valuable assets of a long-established going concern. That it is a valuable asset, even though intangible, is attested to by the fact that many thousands or even millions of dollars may be paid for its estimated value accompanying the sale or purchase of a business. Consider, for instance, the intangible values embodied in the names Coca Cola, Camels, or Beechnut.

4. Capitalized Expenses.

In the classification of fixed assets, it will be noticed that an asset group termed "capitalized expenses" is interposed between the tangible and intangible groups.

Expenses incurred in experimenting upon the new products or processes illustrate the nature of items placed in the group. Until the result of the expenditures is definitely ascertained, it is not known whether they will constitute an operating expense or result in a definite value to be treated as an asset. And sometimes it requires a period of several years before the final result is definitely known. During this time the expenditures are treated as deferred charges. A working model represents a tangible asset, yet it is of no value until it is patented, when it becomes an intangible asset. If it is not patented, the cost must be charged off in the year when it becomes definitely known to be worthless.

5. Valuation Principles for Tangible Assets.

The principles pertaining to the valuation of tangible fixed assets are now taken up in detail.

a. Special Funds.

The chief problem of valuation for special funds is in making certain that accrued interest earned on the fund has been added to the principal sum set aside. There is no peculiar problem of valuation if the fund is composed of cash. If the fund is made up of securities, then the principles of valuation apply, as described in Chap. XIII.

b. Advances to Subsidiary Companies.

When advances are made to subsidiaries for a long period of time, they are considered as permanent investments of the holding or parent company. The value shown in the balance sheet should be the face of the loan made. The interest received on the loan should be credited to an income account and not capitalized.

c. Bonds of Subsidiary Companies.

When bonds of a subsidiary company are acquired, they should be placed on the books at cost value, regardless of whether they were acquired at a price above or below par value. The chief reason for this practise is in keeping with Federal Income Tax procedure. If the purchase price is shown at cost, it is readily available for comparison with the selling price in computing loss or gain. The premium or discount on

the bonds set up in separate accounts, when the bonds are sold at a price above or below par, is amortized on the basis of life of the bonds on the books of the corporation which issued them.

d. Capital Stock of Subsidiary Companies.

There are two methods of valuing the capital stock of subsidiary companies on the books of a holding or parent company. One method shows the investment at cost. An alternative method of valuation reflects the holding or parent company's share in the periodic net profits and net losses of the subsidiary. Under the latter method, the investment account balance is increased or decreased by the subsidiary earnings or losses in the proportion to the holding or parent company's ownership on the total subsidiary capital stock issue outstanding with the contra entry to the Surplus account.

e. Real Estate Holdings.

Business organizations sometimes acquire property as an investment, hoping to realize a profit through a favorable turn in the market. The purpose of acquisition also may have been in anticipation of future expansion and need for the particular piece of property. Again, the practice is followed whereby going concerns buy the plants of competitors for the purpose of lessening competition. After the business is acquired, operations in the newly purchased unit are often discontinued.

The principle of valuation in any of the above cases is to show the property at cost. No depreciation charge should be made against current operations on this type of property, as long as the asset is being held as an investment, and is not used in actual operations. Any taxes, maintenance, or other assessments may be capitalized from a theoretical point of view. In practice, however, these expenses must be closed as a direct charge to profit and loss in the year in which they are incurred, in order to take advantage of the expense as an allowable income tax deduction. Depreciation on this type of fixed asset may be also charged off yearly for the same reason.

f. Construction in Process.

Many manufacturing concerns build or erect additions to their equipment instead of buying or contracting for them. Machinery, dies, tools, jigs, templates, and buildings are illustrations of some of the asset values constructed within or by the plant.

The cost of the assets under construction, at the time the balance sheet is prepared, is the value that should be shown in that statement. The market value should never be set up as the cost price. Such practise could easily reflect an overstated cost accompanied by a profit which had not been realized. The question next raised is, what elements constitute the cost of equipment which a plant itself manufactures? There is no question that the materials and labor used are to be considered as a cost; but a debatable question arises when it comes to determining the amount of overhead expense involved.

In the building of machinery, dies, tools, etc., an amount of fuel, power supervision, and machine repairs, insurance, and depreciation is necessarily involved. If plant production is decreased as a result of asset construction within the plant or overhead expenses are increased, then the asset cost should bear its proportion of overhead expense. If production is neither decreased nor overhead expense increased, then no overhead expense should be charged as a part of fixed asset cost. The entire question hinges on the principle that the production cost of the manufactured product should not be increased or decreased by such an extraordinary activity as fixed asset construction. Increasing production cost results in increased profit through overstatement of unit cost shown in the finished goods inventory (see Chap. XXV). Decreasing production cost by charging too much overhead to assets constructed reflects understated unit cost of the product manufactured, and vitiates comparison of operating results made between periods.

Even though no overhead expense be charged to assets constructed within the plant, a fair amount may be estimated and added to the material and labor cost to ascertain whether or not it would be cheaper to buy than to construct within the plant. The overhead thus considered need not be recorded as a part of the cost.

No depreciation should be charged off on any asset under construction. Depreciation charges begin only after construction has been completed.

g. Land.

Land should be valued at cost. Cost includes the price paid for the actual ground plus all the incidental expenses incurred in the purchase of the land. The expenses which are properly capitalized as a part of the original cost include attorney fees, real estate broker's commissions, and title and lien insurance. Any subsequent improvements to the land should be capitalized. Improvements may consist of grading, sewers, sidewalks, drainage, landscape gardening, and all other improvements.

The land value should not be included with building costs but recorded in a separate account, since land is not subject to depreciation.

h. Buildings.

Buildings should be valued at cost less accumulated depreciation. Depreciation rates vary from 2 to 10 per cent, dependent upon the nature of the structure. Original cost of buildings, if purchased, includes the purchase price, plus the broker's commissions, attorney fees, and the insurance. Any improvements made upon the buildings at the time of acquisition are likewise capitalized.

If buildings are constructed instead of letting a contract, then careful record must be made of the construction cost. Construction cost includes labor, material, insurance premiums on the construction in process, watchmen's wages, supervising cost, architect's fees for plans and specifications, material testing charges, and all incidental expenses incurred to the date of completion.

i. Machinery.

Cost less accumulated depreciation is the principle of valuation applied to machinery. Cost includes invoice price, and freight and cartage prices, plus all installation expenses incurred to the point where the machinery is ready for operation. Installation expenses include material and labor in constructing foundations; also, safety guards enclos-

ing gears and belting. Any future expenditure representative of an improvement, betterment or addition is properly capitalized, as described in Chap. XII.

Valuation of machinery constructed within a plant was described in a preceding section.

j. Shafting and Belting.

The cost of this type of fixed asset is usually shown in a separate account. Cost includes purchase price and freight charges plus installation expenses. Belting depreciates much more rapidly than shafting. The life of various types of belting is usually from 2 to 4 years, while shafting may be used from 15 to 20 years before replacement is necessary. Nevertheless, the cost of the two items is usually shown in a single account. Cost less accumulated depreciation is the principle of valuation used in connection with this asset.

k. Small Tools.

Other names for this type of asset are hand tools and bench tools. They include chisels, hammers, wrenches, drills, bits, saws, etc. While small tools are valued on the basis of cost less depreciation, the depreciation cost is usually computed in a manner quite different from most other fixed assets. The nature of small tools is such that it is rather difficult to set or obtain a depreciation rate which will be uniform from year to year. Small tools are easily broken and often possess a peculiarity of straying home with the worker. To obtain a more accurate periodic charge to operations for the cost of small tools used, therefore, other methods of depreciation are provided.

One plan for obtaining a depreciation charge is to accept the toolroom foreman's appraisal value of the small tools at the end of each fiscal period. The difference between the appraisal value at the close of the year and the balance at the beginning of the year plus the additions during the year would constitute the annual depreciation charge. No reserve for the depreciation on small tools is created; the decrease in value as determined by the appraisal is credited to the Small Tools account.

Another method is to capitalize the original cost of the small tools, which is shown at the same figure from year to year,

provided that approximately the same quantity is constantly maintained. The original cost is not depreciated but each new replacement purchase of small tools is charged as an operating expenditure. This method attempts to avoid the depreciation problem and probably spreads the cost over the fiscal periods as equitably as the former method.

l. Jigs and Templates.

The cost of jigs and templates should not be capitalized unless they represent equipment which will be in general use. In case equipment of this type is used in general production, the value placed upon it is cost less accumulated depreciation, and, ordinarily, the annual depreciation rate (30 to 50 per cent) is high, because this equipment is subject to rough use and frequently becomes quickly obsolete.

Special orders may require special jigs and templates. In this case, the cost should be charged directly to the order and not capitalized.

m. Dies and Molds.

The cost of equipment of this nature is capitalized unless a special order involves the making of peculiar sizes and shapes, in which case the cost is charged directly to the order. Dies and molds are generally made in the tool room or machine shop of the plant, in which case the cost is composed of the material and labor expenses and a proper proportion of the tool room or machine shop burden.

Depreciation on dies and molds may run from 20 to 50 per cent per annum, depending upon their structure and the manufacturing conditions to which they are subjected.

n. Patterns and Drawings.

Assets of this nature, the cost of which is capitalized unless made for a special order, usually possess a rather abbreviated life. This is due to changes in styles, models, and progress in the industry. The annual depreciation rate is quite high, therefore, usually $33\frac{1}{3}$ to 50 per cent.

o. Containers.

The cost of all containers is not capitalized. Wood and paper cartons, boxes, kegs, barrels, etc., are considered as

operating expenses, either manufacturing or selling. Some products manufactured require containers, the nature of which gives them a number of years' use. This necessitates their treatment as an asset. Illustrations are metal drums, cable reels, and gas tanks. These illustrations are typical of the name given to them as floating equipment, since the containers are used for shipment of the product to the customer.

The method of accounting for floating equipment presents a problem. Usually the customer is billed for the cost of the container and credited for the amount upon its return.

Floating equipment may be valued in accordance with the methods described under small tools. One method is to capitalize the purchase price of the container and by appraisal at the close of each period charge the decrease in value existing between the ledger account balance and the appraisal value as depreciation. The better method, possibly, is to capitalize the original number of containers purchased and charge all subsequent purchases as replacements to an operating expense account. The durable nature of some containers, such as metal drums or gas tanks, permits of from 4 to 10 years of useful life. If such is the case, the cost may be depreciated at a predetermined rate and the accumulated depreciation set up in a valuation reserve account.

p. Furniture and Fixtures.

There is no peculiar problem in connection with furniture and fixtures used in stores, offices, and salesrooms. The practise is to capitalize the cost and depreciate at an annual rate varying from $7\frac{1}{2}$ to 20 per cent, depending upon the nature and use of the item.

q. Automobiles.

Automobile trucks and passenger cars used for business purposes are valued at cost less accumulated depreciation. The depreciation rate varies from 20 to $33\frac{1}{3}$ per cent per annum in accordance with the construction of the roads over which the cars must run, number of hours traveled daily, and the nature of the load carried. Original cost includes freight charges, as well as carrying charges, if the cars are purchased on the payment plan.

6. Subsidiary Records for Equipment.

Where each group of equipment, such as machinery, automobiles, furniture and fixtures, etc., is composed of many separate units, the account itself cannot adequately record much more than the total cost. It is important, however, to have other information covering a number of details which cannot be shown in the ledger account. This detail is necessary for the purpose of making the proper entries in later years, when the asset is disposed of; therefore, it is essential that a supplementary record of each unit of equipment be maintained (see Chap. XXI).

The cost of all units of equipment is recorded in the equipment accounts in the general ledger. The equipment accounts are called "control accounts," since they control the detailed information pertaining to each unit of equipment in the supplementary or subsidiary records.

7. Depreciation Reserves for Equipment.

Each different group of equipment, such as machinery, furniture and fixtures, etc., should have a valuation reserve account in the general ledger. The account, Reserve for Depreciation on Machinery, records the accumulated depreciation which has been charged off year after year. The difference between the cost in the equipment account and the accumulated depreciation in the reserve account will represent the present book value of the equipment.

If subsidiary records for all types of equipment are maintained, as described in the preceding section, but one depreciation reserve account is necessary. The subsidiary records, as illustrated in Chap. XXI, furnish the required detail pertaining to the amount of depreciation in the reserve account applicable to each unit, which is controlled by the general ledger account, Reserve for Depreciation. This controlling account reduces the number of depreciation reserve accounts appearing in the balance sheet.

8. Donated Assets.

Sometimes land, buildings, and other equipment are received as a gift by a business concern. Industrial develop-

ment organizations are usually the sponsors of this practise, in order to influence the location of industry in certain towns and cities.

The question naturally arises as to the value to be placed upon a donated asset, since it cost nothing. The answer is a fair appraisal value made by engineers.

The entry to record the acquisition of a gift would be as follows:

General Journal

Mar. 17	Land		\$ 5,000 00			
	Buildings		20,000 00			
	Surplus from Donated Real Estate				\$25,000 00	
	To record the receipt of real estate from the Industrial Development League of X City, as a gift					

The credit of \$25,000 represents a net worth item exclusive of any other capital invested by the business.

The next question to be considered is, whether or not the building should be depreciated as it has cost the recipient nothing? The general principle pertaining to the value of equipment is that the cost is to be depreciated in order to safeguard the capital investment. In the case of a gift, however, donated capital replaces invested capital. It seems to be improper accounting procedure, therefore, to charge operations with depreciation on an asset received as a gift. Provision for replacement should be arranged for by additional invested capital in the future at the time when the equipment received as a gift is to be replaced. An argument on the other side of the question is that operating expenses will be less in the years during which there are no depreciation charges on the asset received as a gift. Thus, comparative operating statements will vary in this respect.

The best accounting treatment in connection with the receipt of equipment as a gift is to amortize the asset value against the surplus set up when the gift was recorded on the

books. The periodic entry until the asset must be replaced, estimating a twenty-year life of the building, would be:

General Journal

19—							
Mar.	18	Surplus from Donated Real Estate Building		\$1,000	00		
		To amortize $\frac{1}{20}$ of the appraised value of gift				\$1,000	00

9. Equipment Appraisals.

The services of the engineer are frequently requisitioned to place a value on equipment. Due to economic development the value of real estate, in particular, may increase greatly over its original cost in years subsequent to the date of its acquisition. An appraisal of property values may disclose that the present replacement value exceeds the book value (cost less the accumulated depreciation in the reserve account) as recorded. Such being the case, it means that the original investment in the asset does not reflect accurate present value; that appreciation has taken place. An appraisal under such circumstances creates what is known as the "sound value" of an asset. Sound value is the replacement value less the accumulated depreciation computed upon the replacement value. An illustration will follow:

Fifteen years ago a business concern purchased a plot of land for \$30,000. A building costing \$100,000 was immediately erected upon the land. The building had been depreciated at a rate of $3\frac{1}{3}$ per cent per annum, and, consequently, accumulated depreciation in the reserve account amounted to \$50,000. At the end of the 15-year period an appraisal was made, which resulted in placing the present estimated replacement values of \$55,000 upon the land, and of \$110,000 upon the building. Also, consider that the building will render useful service for 15 years from the date of the appraisal.

The sound value of the building is determined in the following manner:

Original Cost.....	\$100,000
Accumulated Depreciation (15 years at $3\frac{1}{3}$ per cent per annum).....	50,000
Net Book Value.....	<u>\$ 50,000</u>
Cost of Replacement.....	<u>\$110,000</u>
Depreciation Computed upon Replacement Cost (15 years at $3\frac{1}{3}$ per cent per annum)...	55,000
Sound Value.....	<u><u>\$55,000</u></u>

Even though the assets are considered to have increased in value, no profit has been realized because the assets have not been sold. To show the estimated present value on the books, in order to call attention to the appreciated value of the property on the balance sheet, entries are made as follows:

General Journal

19—						
Dec. 30	Land		\$25,000	00		
	Reserve for Appreciation, Land Value				\$25,000	00
	To record the increase in land value in accordance with appraisal made by the X Appraisal Co.					
	Building		10,000	00		
	Reserve for Depreciation, Building				5,000	00
	Reserve for Appreciation, Building				5,000	00
	To record the increase in the replacement value of the building, in accordance with an appraisal made by the X Appraisal Co.					

Since the actual cost must be depreciated within the remaining time (15 years) in order to reflect actual operating costs, and since the appreciation reserve account must be completely amortized within the same period of time, the following entry must be made at the close of each fiscal period.

General Journal

19—									
Dec.	31	Depreciation on Building		\$3,333	33				
		Reserve for Appreciation, Building		333	33				
		Reserve for Depreciation on Building							
		To record the yearly depreciation on building, and the yearly amortization of the appreciated value of the building						\$3,666	66

As land values are not depreciated, the Reserve for Appreciation of Land Value account remains unchanged until final disposal of the land takes place, or until another appraisal again changes the value.

10. Valuation Principles for Intangible Assets.

a. Patents.

Patents are monopolies on processes and products granted by the federal government to an inventor for a period of 17 years. Patent rights may be acquired through purchase or development by research staffs within the plant. Cost is the value placed upon the patents in either case. Experimental and development expenses should not be charged to the Patent account until the patent has been legally granted. Then the question invariably arises as to what represents cost. If records are kept covering the expenses involved in each experiment or research problem, then the cost can be easily found. Some concerns practise charging off experimental and development expenses each period they are incurred, and capitalize their patents only at a very small figure. They argue that their procedure is warranted because of the doubtful life of the patent, and that whatever value it may possess is reflected through income-earning power.

Standard practise endeavors, however, to place a cost value on patents. Since the patent carries protection against infringement to the owner for 17 years, the cost is usually amortized over this period. As the patent is not replaced in the same manner as a tangible fixed asset may be, the general practise is to write down the value of the Patent account

instead of setting up a depreciation reserve. Frequently, however, a higher rate than one-seventeenth of the cost value is amortized yearly, when it is possible to anticipate obsolescence of the patents owned.

Litigation expense arising when a suit is instituted against alleged infringers should not be capitalized and treated as a cost of the patent. It may be treated as a deferred charge, until damages are awarded or the suit is lost. If damages are awarded, they should be credited to the deferred charge; if the suit is lost, the charge should go to profit and loss.

Costs of litigation in defending a patent suit should not be capitalized but charged as an incidental expense item to profit and loss in the year in which the expense was incurred.

b. Trade Marks and Trade Formulas.

These types of intangible fixed assets should be valued at cost less amortization. Trade marks may be registered for a period of 20 years and are renewable. The cost should be amortized over the first 20 years, unless the existence of the trade mark has established goodwill which may be worth vastly more than the cost shown in the Trade Mark account. Under these conditions the cost of the trade mark may not be amortized. Trade formulas for paint, food products, etc., if capitalized, should be amortized rather rapidly, especially if they are not protected by patent.

c. Franchises.

Franchises are monopolies granted by government to a private enterprise permitting them to carry on some particular business activity. Franchises may be granted for a limited length of time, a long term, an indefinite period or in perpetuity. The cost of obtaining the franchise, either through purchase or original expense, would represent the value at which the intangible asset would be capitalized.

The length of time over which the cost is amortized depends upon the length of time for which the franchise is issued.

d. Leaseholds.

A leasehold is a contract whereby a piece of real property is leased or rented for a definite term of years. Usually no value is recorded unless the rentals are paid in advance.

e. Goodwill.

Goodwill is probably the most important of the intangible fixed assets. Goodwill is created in a business as a result of many factors. Some of them are as follows: location, name of firm, length of time in business, quality of product handled or manufactured, services rendered, excellency of management, development and establishment of trade marks, trade formulas, patents, franchise possession, advertising programs, etc.

The value of goodwill is computed after taking in consideration the profits earned over a period of years, and considering a fair rate of return on the capital invested. The fact that profits in excess of a fair rate of return, have been and are being made is fair evidence that goodwill exists. The value placed on goodwill, however, depends upon whether or not the capital invested is earning more than may be considered a fair rate of return.

For an illustration of goodwill computation consider the following illustration:

Average Net Profit for 5 Years.....	\$12,475.11
Average Capital Invested for 5 Years.....	\$75,000.00
Fair Rate of Return on Investment.....	11 per cent

In the sale of the business in which the above information was taken, it was decided that goodwill would be computed on the bases of 5 years' purchase of the average excess profits.

Average Capital.....	\$75,000.00
11 % of Average Capital.....	\$ 8,250.00
Average Net Profit.....	<u>12,475.11</u>
Average Profits in Excess of (11 %) Fair Return on the Investment.....	\$ 4,225.11
Five Years' Purchase Price $5 \times \$4,225.11$, the Value of the Goodwill.....	<u><u>21,125.55</u></u>

Goodwill should never be reflected on the books as an intangible asset value merely because there is reason to believe that it exists. To be recorded properly on the books, goodwill must come into existence from one of the following sources: at the time of the sale, purchase, incorporation, reorganization or merger of business concerns, or with the change of a partner.

Goodwill, when properly valued, may remain on the books for an indefinite period. The factors bringing about goodwill may be so outstanding in the success of a business as a going concern that the goodwill will represent the most valuable asset.

11. Valuation for the Purposes of Dissolution and Liquidation.

Where business establishments cease operations, due to sale of property to another concern, decree of court, termination of the business contract, or bankruptcy, different principles of valuation usually apply to the assets.

If the business is being sold, or upon retirement or admission of a partner, the asset values should be adjusted to reflect the market value of the inventory and investments, and the sound values of the fixed assets. Notes and accounts receivable are valued, under these conditions, at a conservative value after considering all estimated losses from doubtful accounts.

In the event of a forced sale or bankruptcy, the assets usually bring a value much lower than book value and market value. Realizable values in connection with a forced sale invariably are accompanied by extraordinary losses.

Questions

1. Enumerate the reasons why importance is attached to fixed asset valuation.
2. Contrast tangible assets with intangible assets.
3. Special funds classified as a fixed asset differ in what manner from special funds classified as a current asset?
4. What valuation principle should be adhered to in connection with the following long-term investments:
 - a. Bonds of subsidiary companies?
 - b. Capital stock of subsidiary companies?
5. How should carrying charges be handled on real estate held as an investment?
6. What is the chief valuation problem in connection with fixed assets constructed within a plant?
7. What is included in the cost of land?
8. What general valuation principle usually applies to fixed assets subject to depreciation?
9. What items are included in the cost of the following fixed assets:
 - a. Buildings purchased?
 - b. Buildings constructed by a manufacturing plant?

PART III

FACTORY CONTROLS

CHAPTER XV

COLUMNAR BOOKS A MEANS TO FACTORY CONTROL

1. The Nature of Columnar Journals.

A description of two-column special journals and their advantages in use already have been given. The two-column journal may be indefinitely expanded to meet the needs of any particular business. The expansion consists of an additional number of money columns in the journals.

Columnar journals may be defined as books of original entry containing a series of columns, the caption of each money column bearing the name of an account in the general ledger.

There is no uniform ruling for columnar journals. The nature of an accounting system in a given industry governs the form. Different business concerns in the same industry may have journals with varied rulings. It is possible to illustrate but a few models of columnar journals here, but it must be remembered that there are hundreds of different rulings and forms. The basic forms are described in this chapter. A knowledge of these journals is the keynote to the understanding of any columnar journal system.

2. The Purpose of Columnar Journals.

Manufacturing plants and commercial concerns benefit from the use of columnar journals in that they provide more adequate control. Columnar journals form the basis for a greater measure of control by:

a. Making possible an immediate and detailed analysis of transactions as soon as they are recorded.

b. Providing the necessary summaries to build up controlling accounts.

Sales may be separated by departments, lines, or individual products. Purchases may be recorded likewise. The purchase journal or voucher register may be adapted to record the purchase of all expense items and fixed assets. This is a more flexible plan than could possibly exist in using a two-column purchase journal.

Cash receipts may be analyzed as to their source, such as cash sales, receipts on account from customers, and miscellaneous receipts of various nature. Cash disbursements may be segregated in various columns for expenses, payment to creditors, and other miscellaneous payments.

The greatest benefit to be derived from columnar journals is that it makes possible the use of controlling accounts. Without controlling accounts modern cost-accounting procedure would be impossible. Special control accounts for manufacturing concerns are described in Chaps. XIX, XX, and XXI. The principles of control accounts, pertaining to accounts receivable and accounts payable, are described in Chap. XVI.

The number of columns contained in each journal is determined by the frequency with which certain transactions occur. It is obvious that the purchase journal or voucher register would have a separate column analyzing the purchases by departments, lines of goods, or individual commodities. On the other hand, it would not be exercising good judgment to have a special column in the voucher register of a foundry to record the purchase of automobile trucks. A special column to record the purchase of fixed assets would be folly because of the infrequent occurrence of such transactions.

A detailed description will now be given of the columnar journals in which are recorded transactions pertaining to sales, cash receipts, purchases, cash disbursements, and other miscellaneous items.

3. The Columnar Sales Journal.

Sales made on account are recorded in this journal. Cash sales may be, but usually are not recorded in this journal. Each individual business has its peculiar style of sales journal. For illustrative purposes, a simple form of a sales journal is shown as follows:

FORM 38

Sales Journal							\$1
Date	Account	Invoice Reference	L. F.	Accounts Receivable	Sales		
					Dept. A	Dept. B	Dept. C
19—							
June							
8	E. D. Wise & Co.	F1		\$ 200 00	\$ 200 00		
11	Nix Novelty Corp.	F2		2,418 07	510 20	\$1,019 07	\$ 888 80
13	E. C. Normile	F3		280 00	280 00		
19	Faire & Co.	F4		55 42			55 42
25	Janitor's Supply Co.	F5		910 20		325 20	585 00
28	H. C. Crane	F6		456 99	402 50	54 49	
				\$4,320 68	\$1,392 70	\$1,398 76	\$1,529 22

a. The Principle of Debit and Credit.

The accounts receivable column is the only debit column in the above sales journal. In that column is recorded each individual sale made on account. These debits constitute an increase in the accounts receivable asset.

Each account in the sales column is a credit since sales represent an increase in income. The sales are recorded by departments which permit convenient daily and monthly analyses.

4. The Columnar Cash Receipts Journal.

The sources of the receipts of all cash are analyzed in the cash receipts journal to a degree that is deemed necessary in the individual business concern. An illustration of the cash receipts journal is shown on page 223.

a. The Debit and Credit Principle Explained.

In the cash receipts journal the columns for cash and sales discount record debits; the columns labeled accounts receivable, cash sales, and general ledger, record the credits.

All receipts of cash must be entered in the cash column, while the source of receipts is placed in one of the credit columns. All items credited in the columns, accounts receivable and cash sales are self-explanatory. Where no specially captioned column is available in which to credit the source of the receipt, the credit must be placed in the general ledger column. The sales discount column records the discount allowed customers who make payments on account. Since sales discount represents a decrease of income or an increase of expense, the total of this column must be considered a debit.

5. The Columnar Purchase Journal or Voucher Register.

The purchase journal in its columnar form serves a purpose vastly broader in scope than the two-column purchase journal. In its columnar form, it registers the liability for payment of all expenditures either capital or operating in nature. The purchase of expense items and fixed assets, as well as the purchase of raw materials and finished goods, is registered in this journal. The purchase journal operated with vouchers is called a "voucher register." The details

FORM 39

Cash Receipts Journal							CR2	
Date	Account	Explanation	L. F.	Cash	Sales Discount	Accounts Receivable	Cash Sales	General Ledger
19—								
June								
1	L. H. Hoke, Capital	} Partner's original investment		\$10,000 00				\$10,000 00
1	J. C. Lowe, Capital			10,000 00				10,000 00
9	Cash Sales, Dept. "A"			610 50			\$ 610 50	
16	Cash Sales, Dept. "A"			792 43			792 43	
18	E. D. Wise & Co.			198 00		\$2 00	\$200 00	
22	Cash Sales, Dept. "A"	For the week		1,020 66			1,020 66	
23	E. C. Normile	On account		274 40	5 60	280 00		500 00
29	Notes Receivable	F. Ely paid his note		500 00			979 25	
30	Cash Sales, Dept. "A"	For the week		979 25				
				\$24,375 24	\$7 60	\$480 00	\$3,402 84	\$20,500 00

of the voucher system are described in Chap. XVII. The voucher register is something more than a record of the purchase of materials and merchandise of various types. In the voucher register is recorded the authority for the payment of all cash for purchases as well as for payrolls, various other expenses, petty cash reimbursement, and capital withdrawals.

The use of the columns labeled voucher number, check number, and date paid, as shown in form 40, will be illustrated in Chaps. XVI and XVII.

a. The Principle of Debit and Credit.

The accounts payable column is the only *credit* column in the voucher register with the exception of the sundry credit column. In the accounts payable column is recorded each individual amount which the business is obligated to pay. All other columns record increases in expenses, hence they are debit columns. The purpose of the sundry debit column is to record increases in expense or asset items, which are so infrequent in occurrence that it is not expedient to have special columns.

The sundry credit column records freight in, allowances, refunds to customers, and other transactions which would otherwise require a general journal entry.

6. The Columnar Cash Disbursement Journal.

Cash disbursement journals vary in their rulings in accordance with the requirements of different business concerns. One form of a columnar cash disbursements journal used to record cash payments is shown in the following illustration. A description of the use of the voucher number and check number columns is reserved to Chap. XVII. The explanation column is not used if a voucher system is in operation, since each voucher reveals the reason for the transaction recorded. Likewise, the general ledger column is not needed, if a voucher system is in operation.

a. The Debit and Credit Principle Explained

The cash and purchase discount columns in the cash disbursements journal record the credits; the accounts payable column records the debits.

FORM 40

Voucher Register												V2						
Date	Payable To	Voucher Number	Check Number	Date Paid	Accounts Payable	Purchases			Freight and Cartage In	Delivery Expense	Store Wages	Freight Out	Office Expense	Office Salaries	Sundry			Account
						Dept. A	Dept. B	Dept. C							Dr.	Cr.	Dr.	
19—																		
June																		
	1 Rome Supply Co.				\$ 5,000 00	\$2,500 00		\$2,500 00							\$300 00			Rent
	2 Rentor Realty Co.				300 00													Store Expense
	4 Clinton Machine Co.				2,000 00	1,000 00	\$ 600 00	400 00							62 50			
	5 Sun Printing Co.				62 50													Office Equipment
	7 B. & L. E. Rwy. Co.				72 20				\$60 00			\$12 20			250 00			
	10 Office Equipment Corp.				250 00													
	13 Howard Tool Co.				4,109 70	561 22	2,210 96	1,337 52						\$125 00				
	16 Payroll				675 00					\$50 00	\$500 00							
	18 Huxley & Mill				2,500 00	1,200 00	700 00	600 00										
	20 Standard Supply Co.				26 00								\$26 60			\$ 60		Freight and Cartage In
	24 Globe Refinery				16 20					16 20								
					\$15,011 60	\$5,261 22	\$3,510 96	\$4,837 52	\$60 00	\$66 20	\$500 00	\$12 20	\$26 60	\$125 00	\$612 50	\$ 60		

FORM 41

Cash Disbursements Journal							CD3		
Date	Account	Explanation	Voucher Number	Check Number	L. F.	Cash	Purchase Discount	Accounts Payable	General Ledger
19—									
June	2 Rentor Realty Co.					\$ 300 00		\$ 300 00	
	5 Sun Printing Co.					62 50		62 50	
	8 B. & L. E. Rwy. Co.					72 20		72 20	
	15 Clinton Machine Co.					1,980 00	\$20 00	2,000 00	
	16 Payroll					675 00		675 00	
	23 Howard Tool Co.					4,068 60	41 10	4,109 70	
	27 Huxley & Mill					2,475 00	25 00	2,500 00	
						\$9,633 30	\$86 10	\$9,719 40	

A record of the payment of all cash must be made in the cash column. Since the payment of cash represents a decrease in an asset, obviously the amounts recorded in the cash column are credits. Discount allowed on purchases represents a saving made from prompt payment of invoices. The saving is comparable to a decrease of expense, hence must be a credit.

All items entered in the accounts payable column represent a decrease of the amount owed to creditors, hence all amounts recorded therein are debits. This form of a columnar cash disbursements journal is illustrated to tie in with the voucher register illustrated on page 225 of this chapter.

7. The Columnar General Journal.

An accounting system involving the use of controlling accounts requires a columnar form of the general journal. This journal generally is not used, however, in a manufacturing plant of extensive size. A journal voucher is usually substituted for the journal. In a large plant, adjusting and correcting entries are being made constantly by the many departments. Widely scattered departments, such as the treas-

FORM 42

Journal Voucher		No. 8-137	
To the General Accounting Department			
		Date Aug. 30, 19	
Account	Dr.	Cr.	
Sales Returns and Allowances	\$61 83		
N. Ridlen (Account Receivable)			\$61 83
Allowance on damaged goods attributed to poor packing prior to shipment			
Complete explanation must accompany each entry			
SIGNED <i>D. Douring</i>			

FORM 43

General Journal						J6	
Accounts Payable	Accounts Receivable	General Ledger	L. F.	Account and Explanation	General Ledger	Accounts Receivable	Accounts Payable
				19— June 1			
		\$ 500 00		Notes Receivable			
		800 00		Delivery Equipment			
				J. C. Lowe, Capital	\$1,300 00		
				For value of auto truck and note receivable turned over to the partnership as part of J. C. Lowe's original investment			
\$5,000 00				June 2	5,000 00		
				Rome Supply Co.			
				Notes Payable			
				To record the liability in accepting a 60-day trade acceptance			
				June 26		\$2,418 07	
		2,418 07		Notes Receivable			
				Nix Novelty Co.			
				To record the receipt of a 30-day 6 % note dated June 25, 19—			
\$5,000 00					\$6,300 00	\$2,418 07	

urer's office, the accounts payable department, the cost department, the stores department, and the accounts receivable department, would be unable to use the same journal. The journal voucher records a separate entry on a loose-leaf sheet, which ordinarily appears in the general journal. The journal voucher is sent to the general accounting department, where it is recorded in the general ledger accounts and placed on permanent file.

To develop the controlling account principle, the columnar general journal is illustrated on page 228. The model form shown is termed a "split journal," since the debit and credit columns are on opposite sides of the account column.

a. The Debit and Credit Principle.

All columns to the left of the account column are debit columns; all columns to the right are credit columns. Transactions involving debits to the accounts receivable column and credits to the accounts payable column in the general journal occur rather rarely. An example whereby a debit would be required in the accounts receivable column, would be in case a customer failed to take up his note at maturity. The entry necessary would be:

General Journal

Accounts Receivable			General Ledger
\$5,000 00		Globe Glass Company Notes Receivable To charge back a dishonored note to the maker, Globe Glass Company	\$5,000 00

Similarly, the refusal to pay the company's own note would require a credit to the accounts payable column.

8. Other Columnar Journals.

Other columnar journals may be required, depending upon the nature of the transactions within the individual business. Some other columnar journals not described in this text are as follows:

Sales Returns and Allowance Journal.
Purchases Returns and Allowance Journal.
Notes Receivable Journal.
Notes Payable Journal.
Petty Cash Journal.
Factory Journal.

9. Advantages of Columnar Journals.

So many advantages accompany the use of columnar journals that they are used almost universally. Describing the two-column journal in Chap. IV was merely for the purpose of explaining the basic principle of journal subdivision. The advantages in using columnar journals are as follows:

- a. Makes possible more immediate detailed analysis of transactions.
- b. Transactions are recorded with greater rapidity.
- c. Time is conserved in posting monthly summaries which are posted from column totals.
- d. Errors are minimized and localized, since the debit and credit columns must be balanced in each journal before postings are made.
- e. Permits the installation of controlling accounts, which facilitate the application of cost control.

Questions

1. Define a columnar journal.
2. In what manner does the use of columnar journals facilitate accounting control?
3. What principle determines the number of columns necessary in each journal?
4. Explain the principle of debit and credit applicable to the columnar sales journal.
5. Explain the principle of debit and credit applicable to the columnar cash receipts journal.
6. Explain the use of the "general ledger" column.
7. What is a voucher register?
8. Explain the principle of debit and credit applicable to the voucher register.
9. Explain the use of the sundry column in the voucher register.
10. Explain the principle of debit and credit applicable to the columnar cash disbursements journal.
11. What is a journal voucher?. It is used as a substitute for what?
12. Name some other columnar journals.
13. What are the advantages in using columnar journals?

CHAPTER XVI

CONTROL ACCOUNTS WITH CUSTOMERS AND SUPPLY COMPANIES

1. The Subdivision of the Ledger.

The importance of the special journals has been described in detail. Journals are not the only books of accounting record, however, to which specialization applies. The ledger which has been described and illustrated up to this chapter is termed the "general ledger," but it, too, may be subdivided. There are at least two types of detail accounts which should not appear in the general ledger. They are the customers' and creditors' accounts, which should appear only as summaries in the general ledger. The peculiar problems created in connection with these accounts are next considered.

The majority of business concerns are constantly getting new customers. Each new customer requires a new account. New accounts with creditors, likewise, are constantly being added, while old ones may be closed never to be used again. Since there is a necessity for the opening of new accounts and closing of discarded accounts, it is anything but convenient to have them in the general ledger. The segregation of accounts receivable and accounts payable from the general ledger is one of the most common features of the modern accounting system.

The general ledger may be expanded indefinitely. Book-keeping machines are used in many of the large business concerns today, the machine operators making the postings from invoices, credit memorandums, cash records, vouchers, and journal vouchers.

Separate ledgers in which are kept the customers' accounts are termed "accounts receivable" ledgers. These ledgers are called "subsidiary ledgers" because they are supplementary or auxiliary to the general ledger. Large manufacturing concerns with thousands of customers may have a hundred or more accounts receivable ledgers.

The modern way to handle accounts payable is to prepare a voucher for each item for which a cash payment must be made. For each invoice covering the purchase of an expense or an asset, a voucher is prepared and placed in a file drawer until payment is due. A voucher is a written order authorizing the payment of money and is described in full in the next chapter. The unpaid vouchers form a subsidiary record of the accounts payable, comparable to the accounts receivable ledger.

Expansion of the general ledger does not consist only of the segregation of accounts receivable and accounts payable. Any other group of accounts of like nature may be removed from the general ledger and placed in a special subsidiary ledger, or other record.

In addition to the customer's ledger and unpaid voucher file, other subsidiary ledgers or records in common use are as follows:

Raw Material or Stores Ledger.

Work in Process Record.

Finished Goods Ledger.

Expense Ledger.

Equipment Ledger.

These ledgers are described in detail in Chaps. XIX, XX, and XXI.

2. Advantages of Subsidiary Ledgers.

The use of subsidiary ledgers and other similar records offer numerous advantages. Chief among these are:

1. The subdivision of the ledger fits in with the special journals, permitting one or more persons to have supervision and control over a special line of transactions. An example would be the posting from the sales journal to the customer's ledger, or posting from the cash receipts journal to the customer's ledger. In this manner responsibility is localized within narrow limits.

2. All the detailed accounts of one particular type are placed within a single ledger, group of ledgers, or other record.

3. Numerous clerks may work on the various ledgers at the same time.

3. Controlling Accounts.

Some provision must be made whereby a control is exercised over the individual detailed accounts which are removed from the general ledger to the subsidiary ledger. A subsidiary ledger is controlled by a general ledger account having the same name as the nature of the accounts contained in the subsidiary ledger.

A control account is, then, a general ledger account, controlling some subsidiary ledger or ledgers or other record. The control is established by proving that the aggregate of the balances of all accounts in the subsidiary ledger equals the balance in its control account.

A separate control account must be maintained in the general ledger for each subsidiary ledger or ledgers in which accounts of a different nature are housed. To control properly the subsidiary ledgers enumerated on page 232, the following controlling accounts would appear in the general ledgers.

Raw Material (controlling account).

Work in Process (controlling account).

Finished Goods (controlling account).

Expense (controlling account).

Equipment (controlling account).

There may be a separate controlling account for each accounts receivable ledger, or one controlling account may control several such ledgers. A control account for each subsidiary ledger is the best policy, because responsibility for the monthly proof is localized and placed on one person.

4. Constructing Controlling Accounts.

Controlling accounts are built up in the general ledger by making summary postings from the various columnar journals. It should be quite clear, now, why columnar journals are prerequisite to the use of controlling accounts. Both the Accounts Receivable and Accounts Payable controlling accounts will be illustrated, through posting the columnar journals used as illustrations in the preceding chapter.

5. Posting the Columnar Sales Journal.

Two types of postings are made from the columnar sales journal. Current postings are made as shown on pages 235-236.

FORM 44

Sales Journal							S1
Date	Account	Invoice Reference	L. F.	Accounts Receivable	Sales		
					Dept. A	Dept. B	Dept. C
19—							
June 8	E. D. Wise & Co.	F1	50	\$ 200 00	\$ 200 00		
11	Nix Novelty Corp.	F2	51	2,418 07	510 20	\$1,019 07	\$ 888 80
13	E. C. Normile	F3	52	280 00	280 00		
19	Faire & Co.	F4	53	55 42			55 42
25	Janitor's Supply Co.	F5	54	910 20		325 20	585 00
28	H. C. Crane	F6	55	456 99	402 50	54 49	
				\$4,320 68	\$1,392 70	\$1,398 76	\$1,529 22
				(3)	(4)	(10)	(11)

A. Debits:

1. From the accounts receivable column (each individual amount) to the customers' accounts in the accounts receivable ledger.

The summary postings are made as:

A. Debit:

1. For the total of the accounts receivable column to the Accounts Receivable controlling account in the general ledger.

B. Credit:

1. For the total of each of the sales columns to the different Sales accounts in the general ledger.

The sales journal from which illustrative postings are made to the ledger accounts is shown on page 234.

The summary posting reference is made by showing the page of the ledger to which the account is posted, in the same column just below the posted amount. The posting reference is generally encircled to prevent it from being confused with an amount to be posted.

Before any summary postings are made, each column should be totaled to verify the accuracy in recording the transactions. The sum of the entries in the debit columns must equal the total of the entries in the credit columns. In the sales journal illustration, this mathematical proof of accuracy is as follows:

Accounts Receivable.....	\$4,320.68	
Sales, Dept. A.....	\$1,392.70	
Sales, Dept. B.....	1,398.76	
Sales, Dept. C.....	1,529.22	
	<u>\$4,320.68</u>	<u>\$4,320.68</u>

The ledger accounts affected by posting the sales journal are as follows:

General Ledger			Accounts Receivable Ledger		
Accounts Receivable (controlling account)			E. D. Wise		
		3			50
S1	\$4,320.68		S1	\$200.00	

General Ledger (Cont.)				Accounts Receivable Ledger (Cont.)			
Sales, Dept. A			4	Nix Novelty, Corp.			51
		S1	\$1,392.70		S1	\$2,418.07	
Sales, Dept. B			10	E. C. Normile			52
		S1	\$1,398.76		S1	\$280.00	
Sales, Dept. C			11	Faire & Co.			53
		S1	\$1,529.22		S1	\$55.42	
				Janitor's Supply Co.			54
					S1	\$910.20	
				H. C. Crane			55
					S1	\$456.99	

After the sales journal has been completely posted, note that the summary debit posting to the Accounts Receivable controlling account (\$4,320.68) is equal to the sum of all the debit postings to the customers' accounts in the accounts receivable ledger. It is significant, therefore, to call attention to this general principle involved in controlling accounts. Each amount posted, either a debit or credit, to an individual account in a subsidiary ledger, also must be reflected in like amount in the controlling account.

The fact that the individual items in the accounts receivable column are posted daily as debits to the customers' accounts, and that a summary posting is made from the same column does not prevent the general ledger from balancing. The current postings are made to the customer's account in the customers' ledger, and are not shown individually in the trial balance. The summary posting is made to the general ledger account, Accounts Receivable, known as the "controlling account," and only the balance in this general ledger account is used in the preparation of the trial balance.

FORM 45

Cash Receipts Journal							CR2		
Date	Account	Explanation	L. F.	Cash	Sales Discount	Accounts Receivable	Cash Sales	General Ledger	
19--									
June	1 L. H. Hoke, Capital	} Partner's original investment For the week For the week On account For the week On account F. Ely paid his note For the week	5	\$10,000 00				\$10,000 00	
	1 J. C. Lowe, Capital		6	10,000 00					10,000 00
	9 Cash Sales, Dept. A		✓	610 50				\$ 610 50	
	16 " " A		✓	792 43				792 43	
	18 E. D. Wise and Co.		50	198 00		\$2 00	\$200 00		
	22 Cash Sales, Dept. A		✓	1,020 66				1,020 66	
	23 E. C. Normile		52	274 40		5 60	280 00		
	29 Notes Receivable		7	500 00					500 00
	30 Cash Sales, Dept. A		✓	979 25				979 25	
				\$24,375 24	\$7 60	\$480 00	\$3,402 84	\$20,500 00	
				(1)	(2)	(3)	(4)	(✓)	

6. Posting the Columnar Cash Receipts Journal.

Postings made from the columnar cash receipts journal are of two kinds, namely, current and summary. The current postings are made as follows:

A. Credits:

1. From the accounts receivable column (each individual amount) to the customers' accounts in the accounts receivable ledger.

2. From the general ledger column (individual amount) each to the accounts in the general ledger, as named in the account column of the journal.

The summary postings are made as follows:

A. Debits:

1. For the total of the cash column to the Cash account.

2. For the total of the sales discount column to the Sales Discount account.

B. Credits:

1. For the total of the accounts receivable column to the Accounts Receivable controlling account in the general ledger.

2. For the total of the cash sales column to the Sales, Dept. A account in the general ledger.

The general ledger column total is not posted as a summary, because each amount entered in that column is posted currently to individual accounts in the general ledger.

The cash receipts journal is illustrated on page 237. From this journal postings are made to the ledger accounts.

The column totals in the cash receipts book show the existence of debit and credit equality before the summary postings are made. This proof should always be made before posting the column totals.

Cash.....	\$24,375.24	
Sales Discount.....	7.60	
Accounts Receivable.....	\$	480.00
Cash Sales.....		3,402.84
General Ledger.....		20,500.00
	<u>\$24,382.84</u>	<u>\$24,382.84</u>

After the postings are complete from the cash receipts journal, ignoring the postings from any other journals, the ledger accounts appear as follows:

General Ledger		Accounts Receivable Ledger	
Cash		E. D. Wise and Co.	
	1		50
CR2	\$24,375.24		CR2 \$200.00
Sales Discount		E. C. Normile	
	2		52
CR2	\$7.60		CR2 \$280.00
Accounts Receivable (controlling account)			
	3		
		CR2	\$480.00
Sales, Dept. A			
	4		
		CR2	\$3,402.84
L. Y. Hoke, Capital			
	5		
		CR2	\$10,000.00
J. C. Lowe, Capital			
	6		
		CR2	\$10,000.00
Notes Receivable			
	7		
		CR2	\$500.00

Again, note that the total of the individual credit postings from the cash receipts journal to the customers' accounts in the accounts receivable ledger is the same as the one summary figure posted as a credit to the controlling account (\$480).

7. Posting the Voucher Register.

A modern accounting system for a concern buying from numerous creditors has no provision for creditors' accounts in the general ledger. In the place of accounts payable ledgers,

a card index system records the volume of business transacted with each creditor. The card index of creditors is described in Chap. XVII, in connection with the voucher system. Even this plan is frequently eliminated in favor of a voucher file record.

From the voucher register the current postings are made as follows:

A. Debits:

1. From the sundry debit column to the accounts in the general ledger as named in the account column.

B. Credits:

1. From the sundry credit column to the accounts in the general ledger.

FORM

Voucher

Date	Payable To	Voucher Number	Check Number	Date Paid	L. F.	Accounts Payable	Purchases		
							Dept. A	Dept. B	Dept. C
19— June	1 Rome Supply Co.	70		Trade Acceptance June 2		\$ 5,000 00	\$2,500 00		\$2,500 00
	2 Rentor Realty Co.	71		" 2		300 00			
	4 Clinton Machine Co.	72		" 15		2,000 00	1,000 00	\$ 600 00	400 00
	5 Sun Printing Co.	73		" 5		62 50			
	7 B. and L. E. Rwy. Co.	74		" 8		72 20			
	10 Office Equipment Corp.	75				250 00			
	13 Howard Tool Co.	76		June 23		4,109 70	561 22	2,210 96	1,337 52
	16 Payroll	77		" 16		675 00			
	18 Huxley & Mill	78		" 27		2,500 00	1,200 00	700 00	600 00
	20 Standard Supply Co.	79				26 00			
	24 Globe Refinery	80				16 20			
						\$15,011 60	\$5,261 22	\$3,510 96	\$4,837 52
						(9)	(13)	(14)	(15)

The summary postings are made as follows:

A. Credit:

1. The total of the accounts payable column which is posted to the Accounts Payable controlling account in the general ledger.

B. Debits:

1. For the total of all other column totals, excepting the sundry columns, to the general ledger accounts as named at the head of the column.

The sundry debit and credit column totals are not posted as summaries, since each amount therein is posted currently to the individual accounts in the general ledger.

The voucher register is shown below. Postings are made to the ledger accounts from this register.

46

Register										V2
Freight and Cart- age In	Delivery Expense	Store Wages	Freight Out	Office Expense	Office Salaries	Sundry				Account
						Dr.	Cr.	L. F.		
							\$300 00		21	Rent
							62 50		22	Store Expense
							250 00		23	Office Equipment
					\$125 00					
				\$26 60				60	12	Freight and Cartage In
	16 20									
\$60 00	\$66 20	\$500 00	\$12 20	\$26 60	\$125 00	\$612 50		60		
(12)	(16)	(17)	(18)	(19)	(20)	(✓)	(✓)			

The following ledger accounts are affected by posting the voucher register, all other postings from other journals being omitted.

General Ledger

Accounts Payable (controlling account)		9	Office Salaries		20																																																					
V2	\$15,011.60		V2	\$125.00																																																						
Freight and Cartage In		12	Rent		21																																																					
V2	\$60.00	V2 \$0.60	V2	\$300.00																																																						
Purchases, Dept. A		13	Store Expense		22																																																					
V2	\$5,261.22		V2	\$62.50																																																						
Purchases, Dept. B		14	Office Equipment		23																																																					
V2	\$3,510.96		V2	\$250.00																																																						
Purchases, Dept. C		15	List of unpaid vouchers made up during the month, each of which is recorded in the voucher register before payment is made. <table><tr><th>Date</th><th>Vou- cher Num- ber</th><th>In Favor of:</th><th>Amount</th></tr><tr><td>June 1</td><td>70</td><td>Rome Supply Co.</td><td>\$ 5,000.00</td></tr><tr><td>2</td><td>71</td><td>Rentor Realty Co.</td><td>300.00</td></tr><tr><td>4</td><td>72</td><td>Clinton Machine Co.</td><td>2,000.00</td></tr><tr><td>5</td><td>73</td><td>Sun Printing Co.</td><td>62.50</td></tr><tr><td>7</td><td>74</td><td>B. L. & E. Rwy. Co.</td><td>72.20</td></tr><tr><td>10</td><td>75</td><td>Office Equipment Corp.</td><td>250.00</td></tr><tr><td>13</td><td>76</td><td>Howard Tool Co.</td><td>4,109.70</td></tr><tr><td>16</td><td>77</td><td>Payroll</td><td>675.00</td></tr><tr><td>18</td><td>78</td><td>Huxley & Mill</td><td>2,500.00</td></tr><tr><td>20</td><td>79</td><td>Standard Supply Co.</td><td>26.00</td></tr><tr><td>24</td><td>80</td><td>Globe Refinery</td><td>16.20</td></tr><tr><td colspan="3"></td><td><u>\$15,011.60</u></td></tr></table>				Date	Vou- cher Num- ber	In Favor of:	Amount	June 1	70	Rome Supply Co.	\$ 5,000.00	2	71	Rentor Realty Co.	300.00	4	72	Clinton Machine Co.	2,000.00	5	73	Sun Printing Co.	62.50	7	74	B. L. & E. Rwy. Co.	72.20	10	75	Office Equipment Corp.	250.00	13	76	Howard Tool Co.	4,109.70	16	77	Payroll	675.00	18	78	Huxley & Mill	2,500.00	20	79	Standard Supply Co.	26.00	24	80	Globe Refinery	16.20				<u>\$15,011.60</u>
Date	Vou- cher Num- ber	In Favor of:					Amount																																																			
June 1	70	Rome Supply Co.					\$ 5,000.00																																																			
2	71	Rentor Realty Co.					300.00																																																			
4	72	Clinton Machine Co.					2,000.00																																																			
5	73	Sun Printing Co.	62.50																																																							
7	74	B. L. & E. Rwy. Co.	72.20																																																							
10	75	Office Equipment Corp.	250.00																																																							
13	76	Howard Tool Co.	4,109.70																																																							
16	77	Payroll	675.00																																																							
18	78	Huxley & Mill	2,500.00																																																							
20	79	Standard Supply Co.	26.00																																																							
24	80	Globe Refinery	16.20																																																							
			<u>\$15,011.60</u>																																																							
V2	\$4,837.52																																																									
Delivery Expense		16																																																								
V2	\$66.20																																																									
Store Wages		17																																																								
V2	\$500.00																																																									
Freight Out		18																																																								
V2	\$12.20																																																									
Office Expense		19																																																								
V2	\$26.60																																																									

In posting the voucher register, the summary credit posting to the Accounts Payable control account (\$15,011.60) is the same amount as the total of the vouchers made up during the month and recorded in the voucher register. These vouchers are held in the unpaid file until the date of payment arrives.

8. Posting the Columnar Cash Disbursements Journal.

The only postings made from the columnar cash disbursements journal are summary ones, when a voucher system is in operation as herein outlined. The summary postings are made as:

A. Credits:

1. For the total of the cash column to the Cash account.
2. For the total of the purchase discount column to the Purchase Discount account.

B. Debit:

1. For the total of the accounts payable column to the Accounts Payable controlling account in the general ledger.

There are no current postings required where a voucher system is used, since it eliminates the necessity for an accounts payable ledger. As the vouchers are paid, they are removed from the unpaid file and placed in the paid file. Each paid voucher must be checked in the voucher register as having been paid. By so doing the Accounts Payable control account is proved. The total of unpaid vouchers or unpaid accounts payable, as shown in the voucher register, must equal the balance in the Accounts Payable control account in the general ledger.

The cash disbursements journal serves, then, merely as a record of payments in chronological order, and as a basis for a debit total used in building up the Accounts Payable control account.

The cash disbursements journal from which the postings are made is shown on page 244.

FORM 47

Cash Disbursements Journal						
Date	Account		L. F.	Cash	Purchase Discount	Accounts Payable
19—						
June	2	Rentor Realty Co.		\$ 300 00		\$ 300 00
	5	Sun Printing Co.		62 50		62 50
	8	B. & L. E. Rwy. Co.		72 20		72 20
	15	Clinton Machine Co.		1,980 00	\$20 00	2,000 00
	16	Payroll		675 00		675 00
	23	Howard Tool Co.		4,068 60	41 10	4,109 70
	27	Huxley & Mill		2,475 00	25 00	2,500 00
				<u>\$9,633 30</u>	<u>\$86 10</u>	<u>\$9,719 40</u>
				(1)	(8)	(9)

The general ledger accounts after posting from the cash disbursements journal, ignoring any postings from other journals are as follows:

General Ledger				List of vouchers paid during the month, a record of which is made in the Voucher Register.			
Cash			1	Voucher			Amount
	CD3		\$9,633.30	Date	ber	Payment Made to	Voucher
Purchase Discount				19—			
	CD3		\$86.10	June 2	71	Rentor Realty Co.	\$ 300.00
Accounts Payable				5	73	Sun Printing Co.	62.50
(controlling account)				8	74	B. & L. E. Rwy. Co.	72.20
				15	72	Clinton Machine Co.	2,000.00
				16	77	Payroll	675.00
				23	76	Howard Tool Co.	4,109.70
				27	78	Huxley & Mill	2,500.00
CD3		\$9,719.40					<u>\$9,719.40</u>

In posting the cash disbursements journal, the summary debit posting to the Accounts Payable controlling account (\$9,719.40) is the same amount as the total of the individual vouchers recorded as paid in the voucher register.

9. Posting the Columnar General Journal.

Both current and summary postings are made from the general journal. The current postings are made as:

A. Debits:

1. From the left-hand accounts receivable column for each amount therein, to the customers' accounts in the accounts receivable ledger as named in the account column.

2. From the left-hand general ledger column for each amount to the accounts in the general ledger as named in the account column.

B. Credits:

1. From the right-hand accounts receivable column for each amount therein to the customers' accounts in the accounts receivable ledger as named in the account column.

2. From the right-hand general ledger column for each amount to the accounts in the general ledger as named in the account column.

Each amount entered in the accounts payable columns, either debit or credit, is for the purpose of adjusting some voucher. Since no creditors' ledger is operated, the amounts are not posted currently, but merely serve to adjust the Accounts Payable control account and vouchers.

The summary postings are:

A. Debits:

1. From the left-hand columns:

- a.* For the total of the accounts receivable column to the Accounts Receivable control account in the general ledger.
- b.* For the total of the accounts payable column to the Accounts Payable control account in the general ledger.

B. Credits:

1. From the right-hand columns:

- a.* For the total of the accounts receivable column to the Accounts Receivable control account in the general ledger.
- b.* For the total of the accounts payable column to the Accounts Payable control account in the general ledger.

No totals are posted from the general ledger columns because these totals do not affect controlling accounts. The individual amounts in the general ledger columns are posted currently to the general ledger accounts.

FORM 48

General Journal						J6	
Accounts Payable	Accounts Receivable	General Ledger	L. F.	Account and Explanation	General Ledger	Accounts Receivable	Accounts Payable
		\$ 500 00	7	Notes Receivable			
		800 00	24	Delivery Equipment			
			6	J. C. Lowe, Capital	\$1,300 00		
				For value of auto truck and note receivable turned over to the partnership as part of J. C. Lowe's original investment			
\$5,000 00			✓ 25	Rome Supply Co.	5,000 00		
				Notes Payable			
				To record the liability in accepting a 60-day trade acceptance			
		2,418 07	7	Notes Receivable		\$2,418 07	
			51	Nix Novelty Corp.			
				To record the receipt of a 30 day 6 % note dated June 25, 19—			
\$5,000 00		\$3,718 07			\$6,300 00	\$2,418 07	
(9)						(✓) (3)	

Posting the columnar general journal affects the following ledger accounts, eliminating the postings from all other journals.

General Ledger

Accounts Payable (controlling account)		9	Accounts Receivable (controlling account)		3
J6	\$5,000.00			J6	\$2,418.07
Delivery Equipment		24	H. C. Lowe, Capital		6
J6	\$800.00			J6	\$1,300.00
Notes Receivable		7	Notes Payable		25
J6	\$ 500.00			J6	\$5,000.00
J6	2,418.07				
<u>Accounts Receivable Ledger</u>			Unpaid vouchers reduced in amount as a result of an accounts payable adjustment.		
Nix Novelty Corp.		51			
	J6	\$2,418.07	Date	Voucher Number	Amount Payment Made to Voucher
			19—		
			June 2	70	Rome Supply Co. \$5,000.00

10. The Same Concern Both a Customer and a Creditor.

It sometimes happens that a business concern will buy and sell to the same firm. If this is the case, it is better to set up a customer's account and also prepare a voucher for the amount owed. Settlement of the two balances may be handled separately by a receipt of cash for the amount receivable and a payment of cash for the amount owed. Settlement of the balance owed the creditors or the balance due from the customer is the most practical method. It involves either a cash receipt or a cash disbursement entry and a general entry to cancel the common difference.

11. Keeping the Subsidiary Ledger in Balance.

A fundamental principle must be remembered in connection with controlling accounts as already has been mentioned. Every entry in any of the columnar journals which affects any sub-

subsidiary ledger account must be reflected also in the controlling account. The use of controlling accounts does not eliminate the necessity of proving the accuracy of the account balances in the subsidiary ledgers. It only makes possible the preparation of a trial balance without including each individual customer's and creditor's account balance. At the end of each month, therefore, the amount of the balances in the subsidiary ledgers or other record must be proved with the control account balance. If any difference exists, it must be traced through verification of:

- a. Summary postings to the control accounts.
- b. Current postings to the subsidiary ledger.
- c. Unpaid voucher file with the record of vouchers unpaid in the date paid column of the voucher register.
- d. Mathematical computations as to addition and subtraction in each subsidiary ledger account.

12. Advantages in the Use of Controlling Accounts.

The chief advantages in using controlling accounts are as follows:

1. Eliminates the necessity of including every detail account balance in the trial balance. Only the controlling account balances are shown.
2. Serves as a check on the subsidiary ledgers or some other record it controls. If a trial balance is obtained, but the subsidiary ledger or other record does not balance with its controlling account, then one or more account balances are wrong in the subsidiary ledger or other record.
3. Localizes errors when there are several controlling accounts in operation.
4. Permits of many manufacturing controls being brought into use, the essence of cost accounting.

13. Preparation of a Trial Balance; Proving the Subsidiary Ledger with the Controlling Account.

The following general ledger accounts are now shown with complete postings from all the columnar journals:

Cash				1	Sales Discount				2
CR2	\$24,375.24	CD3	\$9,633.30		CR2	\$7.60			

Accounts Receivable

3

Sales	S1	\$4,320.68	Cash	CR2	\$ 480.00
			General Journal	J6	2,418.07
					2,898.07

Sales, Dept. A 4

L. Y. Hoke, Capital 5

CR	\$3,402.84
S1	1,392.70
	4,795.54

CR2	\$10,000.00
-----	-------------

J. C. Lowe, Capital 5

Notes Receivable 7

CR2	\$10,000.00
J6	1,300.00
	11,300.00

J6	\$ 500.00
J6	2,418.07
	2,918.07

CR2	\$500.00
-----	----------

Purchase Discount 8

Sales, Dept. B 10

CD3	\$86.10
-----	---------

S1	\$1,398.76
----	------------

Accounts Payable

9

Cash	CD3	\$ 9,719.40	Voucher Register	V2	\$15,011.60
General Ledger	J6	5,000.00			
		14,719.40			

Sales, Dept. C 11

Freight & Cartage In 12

S1	\$1,529.22
----	------------

V2	\$60.00
----	---------

V2	\$0.60
----	--------

Purchases, Dept. A 13

Purchases, Dept. B 14

V2	\$5,261.22
----	------------

V2	\$3,510.96
----	------------

Purchases, Dept. C 15

Delivery Expense 16

V2	\$4,837.52
----	------------

V2	\$66.20
----	---------

Store Wages 17

Freight Out 18

V2	\$500.00
----	----------

V2	\$12.20
----	---------

Office Expense 19

Office Salaries 20

V2	\$26.60
----	---------

V2	\$125.00
----	----------

Rent		21	Store Expense		22
V2	\$300.00		V2	\$62.50	
Office Equipment		23	Delivery Equipment		24
V2	\$250.00		J6	\$800.00	
Notes Payable		25			
	J6	\$5,000.00			

A trial balance of the general ledger is shown below:

FORM 49
HOKE AND LOWE
TRIAL BALANCE
June 30, 19—

Cash	\$14,741	94		
Sales Discount		7	60	
Accounts Receivable (controlling account)	1,422	61		
Sales, Dept. A			\$ 4,795	54
L. Y. Hoke, Capital			10,000	00
J. C. Lowe, Capital			11,300	00
Notes Receivable	2,418	07		
Purchase Discount			86	10
Sales, Dept. B			1,398	76
Accounts Payable (controlling account)			292	20
Sales, Dept. C			1,529	22
Freight and Cartage In	59	40		
Purchases, Dept. A	5,261	22		
Purchases, Dept. B	3,510	96		
Purchases, Dept. C	4,837	52		
Delivery Expense	66	20		
Store Wages	500	00		
Freight Out	12	20		
Office Expense	26	60		
Office Salaries	125	00		
Rent	300	00		
Store Expense	62	50		
Office Equipment	250	00		
Delivery Equipment	800	00		
Notes Payable			5,000	00
	\$34,401	82	\$34,401	82

The individual accounts in the accounts receivable subsidiary ledger appear as follows after the postings are complete:

Accounts Receivable Ledger

E. D. Wise and Co. 50				Nix Novelty Corp. 51			
S1	\$200.00	CR2	\$200.00	S1	\$2,418.07	J6	\$2,418.07
E. C. Normile 52				Faire & Co- 53			
S1	\$280.00	CR2	\$280.00	S1	\$55.42		
Janitor's Supply Co. 54				H. C. Crane 55			
S1	\$910.20			S1	\$456.99		

The balances taken from the accounts receivable subsidiary ledger are as follows:

Schedule of Accounts Receivable

June 30, 19—

Faire & Co.....	\$ 55.42
Janitor's Supply Co.....	910.20
H. C. Crane.....	456.99
	<u>\$1,422.61</u>

Since this total checks with the Accounts Receivable controlling account balance, it is proof that this subsidiary ledger is in control.

An inspection of the unpaid voucher file should reveal the following vouchers unpaid at June 30, 19—:

Schedule of Accounts Payable June 30, 19—

Voucher 75	Office Equipment Corp.....	\$250.00
79	Standard Supply Co.....	26.00
80	Globe Refinery.....	16.20
		<u>\$292.20</u>

Here, again, the unpaid vouchers as a total agree with the Accounts Payable controlling account in the general ledger.

Questions

1. What necessitates a subdivision of the general ledger?
2. Define a subsidiary ledger.

3. Name some of the most common subsidiary ledgers which are used.
4. Enumerate the advantages arising from the use of subsidiary ledgers.
5. Define a controlling account.
6. Is it necessary to have a separate controlling account to control each accounts receivable subsidiary ledger?
7. What are the sources of the postings to the general ledger controlling account, Accounts Receivable?
8. What fundamental principle must be kept in mind when postings are made to subsidiary ledgers controlled by a general ledger controlling account?
9. What are the postings which are made from the sales journal?
10. Why is it that the general ledger will not be out of balance as a result of a summary posting made from the sales journal to the Accounts Receivable controlling account, while at the same time detailed postings are made to the individual customers' accounts in the accounts receivable subsidiary ledger?
11. What are the postings which are made from the cash receipts journal?
12. What are the sources of the postings to the Accounts Payable controlling account?
13. What are the postings which are made from the voucher register?
14. What are the postings which are made from the cash disbursements journal?
15. What are the postings which are made from the general journal?
16. What procedure must be taken if the subsidiary record is not in balance with its general ledger controlling account?
17. What is the best method of handling the accounts of a customer and a creditor both of whom happen to be the same party?
18. What are the advantages in using controlling accounts?

CHAPTER XVII

THE VOUCHER SYSTEM

1. The Voucher.

A successful factory accounting system will have a voucher system as its most important operation division. A voucher is a written order for the payment of money attested to by someone in authority as being proper and correct. A voucher lists the definite transactions which are covered by the authorized payment, and names the accounts affected. The detailed items vouched for are as follows.

a. The goods ordered and listed on the vendor's invoice have been received.

b. The cost price is correct, and the price extension has been verified.

c. The proper distribution has been made. That is, the accounts and amounts affected have been entered properly on the voucher.

d. The authority for payment has been approved.

Each one of the above details should be certified by a different employee. In this manner, an effective check and control is maintained over the expenditures. Where authority rests with different employees, one checking against the other, a system of internal check exists. Every accounting system should be devised so that internal checks will safeguard the company's interests.

An illustration of a voucher is shown in Form 50.

Each voucher is given a consecutive number. There are various systems of numbering in use. Invoices are frequently received after the first of the month which represent expenditures applicable to the preceding month. Some arrangements must be made whereby invoices received after the first of the month but applicable to the preceding month will not become confused with the invoices for expenditures applicable to the current month. To keep the vouchers separate for the different months numerous methods are employed. Two

FORM 50

Invoices			Voucher No. 1016	
Date	Remarks	Amount	Creditor <u>Blake Supply Co.</u>	
Jan. 22		\$1,074 92	Check Number 12	Date Paid Jan. 31, 19—
			Account	Amount
			Purchases Raw Material	\$958 32
			Direct Labor	
			Indirect Labor	
			Freight In	
			Fuel and Power	
			Factory Expense	116 60
			Machinery Maintenance	
			Salesmen's Salaries	
			Traveling Expenses	
			Advertising	
			Shipping Expenses	
			Office Salaries	
			Telephone	
			Office Expense	
			Postage	
			Officers Salaries	
	Total	\$1,074 92		
	Purchase Discount	21 50		
	Cash Disbursement	\$1,053 42		
Distribution Approved: Signature				
Payment Approved: Signature				
			\$1,074 92	

methods in use will be mentioned. The number of each voucher made in January may be given the prefix "A," February "B," etc. If there are never more than 1,000 vouchers a month the numbers from 1,000 to 1,999 may be used for January; 2,000 to 2,999 for February, etc.

There is no uniformity in practice as to when vouchers are prepared. Some concerns make it a practice to prepare a

voucher for each invoice, especially when the discount is to be deducted within the discount period. Other concerns make up their purchase vouchers only once or twice a month. One voucher may include many invoices if they are payable to the same creditor. The nature of the purchases and payment policy of the plant influence the manner in which vouchers are prepared.

After a voucher has been prepared and its distribution approved, it should be recorded in the voucher register. The entry provides a permanent record. The voucher in some cases is made out in duplicate. The duplicate may be used as the authority for the entry, while the original follows another trail in the office routine.

After the voucher has been recorded in the register, it is then filed for payment. If a discount is to be taken, the voucher will be filed under the date when it must be paid. Different methods of handling purchase discounts in connection with the voucher system are discussed in Sec. 11 of this chapter.

2. The Voucher System.

All modern business concerns make use of the voucher system as their most important business control. The voucher system is the master key to the scheme of controlling a cost accounting system.

Voucher systems consist of the following books and records:

- a. The Voucher (described above).
- b. A Voucher Register.
- c. A Voucher Distribution Summary Sheet.
- d. An Operating Ledger.
- e. A Voucher Check.
- f. A Check Register.
- g. A Voucher Index of Creditors.

These forms, records, and books are described in detail in the following sections of this chapter.

3. Some Plant Activities Preceding the Use of the Voucher.

Before a description is given of the recording of the voucher in the voucher register, it is important that such plant activities as are involved in the use of the voucher should be considered. Here is a typical series of steps that follow in

sequence in the plant prior to the preparation of the voucher.

- a. A request for an estimate on a job is received.
- b. The engineering department prepares the estimate and blue prints for the order.
- c. The prepared estimate is accepted by the customer, and a sales order is received in the plant.
- d. A bill of materials, as made up from the blue print, is sent to the store room where it is checked with the material on hand.
- e. In event adequate material is not on hand, the stores department places a purchase order with the purchasing agent.
- f. The purchasing agent sends out requests for bids on the material wanted.
- g. A purchase order is placed by the purchasing agent, usually with the lowest bidder. This order specifies the date the material is wanted, and that the shipment must plainly show the purchase order and requisition numbers.
- h. The material is shipped and the shipper mails an invoice to the plant's purchasing agent.
- i. When the material is received in the store department, the receiving clerk fills out a "receiving slip," usually containing the following information:
 - (1) Purchase order number.
 - (2) Purchase requisition number.
 - (3) The name of the transportation company delivering the shipment.
 - (4) The number of containers received.
 - (5) The total weight of the material received.
 - (6) The itemized list of the material received.
 - (7) Amount of transportation charges.
- j. The receiving slip is sent to the accounting department, where it is compared with the invoice.
- k. If no discrepancy is found to exist between the invoice and the receiving record, a voucher is then made from the invoice. The invoice is usually attached to the voucher.

4. The Voucher Register.

The voucher register is a columnar book of original entry in which a record of all expenditures is made. It is the outgrowth of the purchase journal, and was described briefly in the two preceding chapters. It is immaterial what the nature

FORM 51

Voucher Register

Date		Payable To	Voucher Number	V. No.	Date Paid	Amount Payable	Warehouse New Materials	Direct Labor	Manufacturing Expense					Distribution Expense					Administrative Expense					Totals			Account																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
									Interest Labor	Freight In	Fuel and Power	Factory Expense	Machinery Maintenance	Salaries & Sundry	Traveling Expense	Advertising	Shipping Expense	Freight Out	Warehouse Wages	Office Salaries	Telephone	Office Expense	Postage	Office Salaries	De	Cr		Cr																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
Jan	2	Franklin Brass Company	1000	1	Jan 1	\$ 1,947.79	\$ 347.40																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								

of the expenditures may be. The important thing to remember is that every expenditure must be entered in the voucher register before payment can be made. All liabilities for payment should be vouchered and recorded as soon as they become known, irrespective of when payment will be made. There are innumerable forms of the voucher register. The number of account columns used in the voucher register differs with the needs and nature of the business. Some firms analyze their expenditures in great detail in the voucher register, using a separate column for each expense account which is frequently affected by transactions. Voucher registers with 50 to 70 columns are not so prevalent as they were some years ago. The present-day tendency in industrial accounting is to substitute comparatively few control account columns for the many individual account columns.

An old style voucher register with 21 columns is shown in Form 51. Limitation of space prevents showing a 60-column model. The illustration, however, is typical of the nature of the detailed analytical column voucher register.

A purchase discount column is sometimes shown in the voucher register. Obviously, it is to record the savings made by taking advantage of the discounts allowed on the invoices. This saving constitutes a decrease of expense or an increase in income, hence, is considered as a credit. The provision for a purchase discount column in the voucher register depends upon the invariable act of taking all discounts offered (see Sec. 11 in this chapter).

The voucher register shown in Form 52 could well be substituted for the one shown in the preceding illustration. A voucher register of the following type involves the use of controlling accounts for different expenses. The manner in which the expense controlling accounts function is described in Chap. XX.

5. The Voucher Distribution and Summary Sheet.

A voucher distribution and summary sheet may be used in connection with the voucher register having expense controlling account columns. These summaries are shown in the illustrations on pages 259, 260 and 261.

FORM 52

Voucher Register

Date 19—	Payable To	Voucher Number	✓	Paid		Accounts Payable	Manufac- turing Cost	Distribu- tion Expense	Adminis- trative Expense	Sundry		
				Check Num- ber	Date					Dr.	Ct.	L. F. Account
Jan. 2	Frankfort Brass Company	1000		2	Jan. 12	\$ 1,947 90	\$ 1,947 90					
3	Auburn Collieries	1001		9	" 31	562 55	562 55					
4	C. and A. R. Co.	1002		1	" 5	252 23	196 53	\$ 55 70				
5	Empire Publishing Company	1003				178 56		178 56				
8	Buckeye Hardware Company	1004				1,383 10	1,383 10					
10	J. C. Jiggs	1005				373 04		191 32	\$ 181 72			
12	H. C. New, Postmaster	1006		3	Jan. 12	41 50		41 50				
12	Model Machine Works	1007				2,475 90				\$2,475 90		Machinery
14	Penna. R. R. Co.	1008		4	Jan. 14	372 20		372 20				Machinery
16	Campbell Machine Works	1009		7	" 28	99 83	99 83					
19	A. B. Corbin, Paymaster	1010		5	" 19	7,030 95	3,500 95	1,575 00	1,955 00			
21	Lakes Lumber Company	1011		8	" 31	3,019 72	3,019 72					
22	Morgan and Bell	1012				56 08	56 08					
22	Blake Supply Company	1013		12	Jan. 31	1,074 92	1,074 92	116 64				
23	L. R. Ashmore	1014				116 64						
23	Young and Green	1015				542 04	547 22				\$5 18	Freight in (manufac- turing cost)
25	Bell Telephone Company	1016		6	Jan. 25	27 83			27 83			Office equipment
28	Coleman & Company	1017				192 10				192 10		
31	Melrose Foundries	1018				1,756 90	1,756 90					
31	A. B. Corbin, Paymaster	1019		10	Jan. 31	7,211 50	3,686 00	1,575 00	1,950 50			
31	Petty Cash	1020		11	" 31	64 50	9 75	10 00	34 75			
						\$28,769 99	\$17,841 45	\$3,702 22	\$4,191 30	\$3,040 20	\$5 18	

FORM 53

Voucher Distribution and Summary									
Manufacturing Cost Account					For the month of January, 19.....				
Purchases Raw Materials			Direct Labor			Indirect Labor			
Voucher or Journal Number	Amount		Voucher or Journal Number	Amount		Voucher or Journal Number	Amount		
1000	\$1,947	90	1010	\$2,952	20	1010	\$ 548	75	
1004	1,383	10	1019	3,092	50	1019		593	50
1011	3,019	72							
1013	958	32							
1015	547	22							
1018	1,756	90							
	\$9,613	16		\$6,044	70		\$1,142	25	
Freight In			Fuel and Power			Factory Expense			
Voucher or Journal Number	Amount		Voucher or Journal Number	Amount		Voucher or Journal Number	Amount		
1002	\$ 196	53	1001	\$ 562	55	1012	\$ 56	08	
1015	(Cr.) 5	18				1013		116	60
						1020		9	75
	\$ 191	35		\$ 562	55		\$ 182	43	
Machinery Maintenance									
Voucher or Journal Number	Amount		Voucher or Journal Number	Amount		Voucher or Journal Number	Amount		
1009	\$ 99	83							
	\$ 99	83							

FORM 53a

Voucher Distribution and Summary								
Distribution Expense			Account			For the month of January, 19		
Salesmen's Salaries			Traveling Expense			Advertising		
Voucher or Journal Number	Amount		Voucher or Journal Number	Amount		Voucher or Journal Number	Amount	
1010	\$1,200	00	1014	\$ 116	64	1003	\$ 178	56
1019	1,200	00				1020	10	00
	\$2,400	00		\$ 116	64		\$ 188	56
Shipping Expense			Freight Out			Warehouse Wages		
Voucher or Journal Number	Amount		Voucher or Journal Number	Amount		Voucher or Journal Number	Amount	
1005	\$ 191	32	1002	\$ 55	70	1010	\$ 375	00
						1019	375	00
	\$ 191	32		\$ 55	70		\$ 750	00

In addition to entering the amount affecting the expense control accounts in the voucher register, the amount is also entered in the specific expense account or accounts on the voucher summary sheet. In this manner, the total of each detailed expense item is summarized monthly. Credits to any of the accounts are entered in "red," which eliminates much lost space in providing credit columns.

6. The Operating Ledger.

The operating ledger is used in connection with the voucher register involving the use of expense controlling accounts and the voucher summary sheet. The operating ledger is of course subsidiary to the general ledger. It may be substituted for the expense ledgers mentioned in Chap. XX. The monthly summaries from each account shown in the voucher distribution and summary sheet are transferred to the operating ledger. A form of the operating ledger is shown on page 263.

It may be seen that only a few sheets provide for the detailed expense items for the entire year. An operating ledger of this type also furnishes the necessary information in convenient form for the monthly income, profit and loss statement as well as for the complete year, except for the closing inventory. If a perpetual inventory is not maintained, a physical inventory of the unused materials must be taken. An offsetting red ink credit must be placed in the subsidiary material accounts in the voucher distribution and summary sheet for the new inventory amounts.

7. The Voucher Check.

When a vouchered invoice is to be paid, it is removed from the file and a check is made out for the net amount. Invoices vouchered prior to payment, obviously, will carry a series of numbers varying from the check numbers used. This is true because an invoice offering a discount ordinarily will be paid within the discount period. Other vouchers for invoices with terms of "net 30 days" may be made up before, but paid after the vouchers covering invoices upon which discounts have been taken.

To avoid two sets of numbers, many concerns combine the voucher and check, making it serve both purposes. The

FORM 54

[illegible]

voucher check is usually made out at the time the voucher is prepared. When this is the procedure, it implies that the purchase discount is invariably taken, and the purchase discount column then appears in the voucher register. Obviously if purchase discounts are not taken regularly, the voucher check cannot be made until the time of payment arrives, because the amount of the check would not be definitely known. Under the latter condition it is better to have the purchase discount column in the check register. There are innumerable forms of the voucher check. One form is shown as follows:

FORM 55.—VOUCHER CHECK

In payment of Invoices:				Pittsburgh, Pa. Jan. 31 19.....		No. 12.....	
				The Empire Engineering Company			
Date		Amount		Pay to the order of Blake Supply Co. \$1,053.42			
Jan. 22		\$1,074 92		One Thousand Fifty-three and $\frac{42}{100}$Dollars			
Total		\$1,074 92		To the Schenley			
Less Discount		21 50		National Bank			
Net		\$1,053 42					

Ruling sometimes is shown on the reverse side of the check which provides for the information pertaining to the invoices paid. The endorsed check becomes a receipt for payment of the specified invoices.

Where the voucher check is used, arrangements must be made to provide for the account distribution which appears in detail on the voucher. The plan frequently adopted is to make the distribution directly from the invoice. A rubber voucher stamp as illustrated below is stamped on each invoice. The information called for is then inserted from which the distribution of expenditures is made.

FORM 56.—VOUCHER STAMP

Voucher No. <u>1013.</u>	
Price Checked <u>L. K.</u>	
Extension Checked <u>F. K. M.</u>	
Charge: Account	Amount
Purchases Raw Material	\$ 958 32
Factory Expense	116 60
	\$1,074 92
Distribution	
Verified <u>C. R.</u>	Paid:
	Date <u>Jan. 31, 19</u>
Payment	Check <u>12</u>
Approved <u>R. I.</u>	

FORM 57.—VOUCHER CHECK
(Original)

RIVER BARGE COMPANY			
Voucher No. 1013			Check No. 12
Pittsburgh, Pa. January 31 19....			
Pay to the order of Blake Supply Company \$1,053.42			
One Thousand Fifty-three and $\frac{42}{100}$ Dollars			
In full payment of account as shown in statement attached.			
To ALLEGHENY NATIONAL BANK			
_____ Treasurer			
RIVER BARGE COMPANY			
Statement of Account			
Date of invoice	Description	Amount	Total
Jan. 22	Less discount 2 %	\$1,074 92 21 50	 \$1,053 42
Detach and retain for your file			

FORM 57a.—VOUCHER CHECK
(Duplicate)
Inside

RIVER BARGE COMPANY

Voucher No.
1013

Check No.
12

Pittsburgh, Pa. January 31 19.....

Pay to the order of..... Blake Supply Company \$1,053.42

One Thousand Fifty-three and.....42/100 Dollars

I certify that the amounts shown below are correct; that the invoices are attached hereto after having been examined and approved by the proper persons; and that the expense was incurred for the benefit of the River Barge Company.

Plant Auditor

Statement of Account

Date of invoice	Description	Amount	Total
Jan. 22	Less discount 2 %	\$1,074 92 21 50	\$1,053 42

FORM 57b.—VOUCHER CHECK
(Duplicate)
Outside

			RIVER BARGE COMPANY		
			Voucher No. 1013		
			Date Jan. 22, 19.....		
			Check No. 12		
			Date Paid Jan. 31, 19.....		
			Payable To Blake Supply Company		
			Voucher Distribution		
Account number	Account	Amount			
	Purchases Raw Material	\$ 958.32			
	Factory Expense	116.60			
Total		\$1,074.92			
Purchase Discount		21.50			
Net		\$1,053.42			

Some firms give the voucher checks a series of numbers known as "treasurer's check numbers," which differ from the voucher check number. The purpose of so doing is to facilitate the monthly reconciliation of the cash balance in the bank.

8. The Check Register.

The check register serves the same purpose as the cash disbursements journal, in that it records the payment of all cash. The check register is invariably used where the voucher system is in operation. Its use implies that all expenditures, regardless of their nature, are charged to their proper accounts through the voucher register. No current postings are made from the check register. The only postings are summary ones made as credits to the Cash and Purchase Discount accounts and as a debit to the Accounts Payable control account. A check register is shown in Form 58.

Entries are made in the check register from the original checks or from a duplicate record of the check.

9. Voucher Index of Creditors.

The use of a voucher register eliminates the use of a creditor's ledger. The Accounts Payable control account in the general ledger may be proved by comparing the balance of this account with the total unpaid vouchers.

Some business concerns wish to have a record of the volume of business done with each of their creditors. In the absence of an accounts payable ledger, they operate a voucher index of creditors. A loose leaf card record shows the amount paid each creditor. Columns for the date paid and the voucher number give an index to the invoices filed in alphabetical arrangement. Some index records do not have a column for the amount. The record may be filled in from the voucher check or from the check register, usually from the latter source.

10. Peculiar Problems in Connection with Some Vouchered Invoices.

An invoice is supposed to be paid as originally vouchered. There are a few exceptions to the rule due to circumstances arising as follows:

a. A voucher made, with the discount deducted, is not paid in time to take advantage of the discount.

FORM 58

Check Register							
Date	Creditor	Voucher Number	Check Number	✓	Cash	Purchase Discount	Accounts Payable
19—							
Jan. 5	C. and A. R. R. Co.	1002	1		\$ 252 23		\$ 252 23
12	Frankfort Brass Company	1000	2		1,928 42	\$19 48	1,947 90
12	H. C. New	1006	3		41 50		41 50
14	Penna. R. R. Co.	1008	4		372 20		372 20
19	A. B. Corbin, Paymaster	1010	5		7,030 95		7,030 95
25	Bell Telephone Company	1016	6		27 83		27 83
28	Campbell Machine Works	1009	7		99 83		99 83
31	Lakes Lumber Company	1011	8		2,989 52	30 20	3,019 72
31	Auburn Collieries	1001	9		562 55		562 55
31	A. B. Corbin, Paymaster	1019	10		7,211 50		7,211 50
31	Petty Cash	1020	11		54 50		54 50
31	Blake Supply Company	1013	12		1,053 42	21 50	1,074 92
					\$21,624 45	\$71 18	\$21,695 63

FORM 59

[illegible]

b. A return is made, or an allowance is received, on some invoice which has been vouchered.

c. A partial payment may be made on a vouchered invoice.

d. A voucher covering payment of an invoice may be cancelled by giving a note as a deferred payment.

e. A creditor's invoice vouchered for payment may be used to offset a charge against the same creditor as the result of making a sale to him.

(a) *Discount Lost after Voucher Is Prepared.*

The entry in the voucher register for the original voucher was as follows:

Voucher Register

	Voucher Number	Accounts Payable	Purchase Discount	Purchases	
	5113	\$1,960 00	\$40 00	\$2,000 00	

Failure to pay the voucher within the time limit would necessitate the cancellation of the voucher for \$1,960, and the preparation of a new one for \$2,000. If the voucher register has a sundry column, the correction is quite easily made. It would be as follows in the voucher register.

Voucher Register

Voucher Number	Accounts Payable	Purchase Discount	Purchases	Sundry			
				Dr.	Cr.	L. F.	Account
5406	\$2,000 00			\$1,960 00 40 00			Accounts Payable Purchase Discount

The entries in the sundry debit column, when posted, correct the postings from the original entry. The \$1,960 posted as a debit to the controlling account offsets the credit of \$1,960 entering the controlling account from the accounts payable column in the first entry. The \$40 debit to the Purchase Discount account also offsets a like amount when the summary credit posting is made from the purchase discount column.

(b) Purchase Return or Allowance after Invoice Has Been Vouchered.

The original transaction was entered in the voucher register as shown in (a) above.

A \$300 allowance was received from the creditor after voucher 5113 was entered, but before the voucher was paid. Voucher 5113 must be cancelled and a new one prepared.

The correction may be made in the voucher register as shown in (a) above.

Voucher Register

Voucher Number	Accounts Payable	Purchase Discount	Purchases	Sundry			
				Dr.	Cr.	L. F.	Account
5406	\$1,666 00	\$34 00		\$1,960 00 40 00	\$300 00		Accounts Payable Purchase Discount Purchases Returned and Allowances

The new voucher 5406 gives adequate explanation for the two debits and credit appearing in the sundry column. The discount of \$34 need not be shown in the purchase discount column since the correction could, necessarily, be made by showing a debit of \$6 in the sundry column for the discount unallowed on the purchase allowance of \$300. Actually a \$34 discount was earned instead of a \$40 discount. Hence, the correcting entry as illustrated is better.

(c) *Partial Payment Made on a Vouchered Invoice.*

The same original transaction is used in this illustration as was shown in the preceding cases. The exception is that one half of the amount of the invoice covered by voucher 5113 is to be paid, deducting the discount, and the balance to be paid at a later date.

Voucher Register

Voucher Number	Accounts Payable	Purchase Discount	Purchases	Sundry			
				Dr.	Cr.	L. F.	Account
5406	\$980 00	\$20 00		\$40 00			Purchase Discount
				960 00			Accounts Payable
5407	1,000 00			1,000 00			Accounts Payable

The debits posted from the sundry column cancel the postings of the original entry, namely, a \$40 credit to the Purchase Discount account, and \$1,960, credit to the Accounts Payable account. Voucher 5406 will be paid, taking advantage of the discount of \$20. Voucher 5407 will be paid for the amount of \$1,000 at some later date.

(d) *Issuing a Note Covering a Vouchered Invoice.*

In event a vouchered invoice is not paid at the end of the original entry period, it may be necessary to issue a note. This means that the payment of the invoice is to be deferred until some future date. The vouchers must be cancelled, a note issued, and a new voucher made up at the time the note matures.

The original entry was made in the voucher register as shown in (a) above.

The entry to cancel voucher 5113 would be made in the general journal since no new voucher will be prepared until the note becomes due. The correcting entry would be as shown below

General Journal

Accounts Payable		General Ledger				General Ledger	
\$1,960	00			Longhorn Leather Co.			
				Purchase Discount			
		\$40	00	Notes Payable		\$2,000	00
				To cancel voucher 5113 in giving a 60-day 6 % note, dated Feb. 16, 19—, covering their invoice of Jan. 16, 19—			

The summary debit posting from the accounts payable column contains the \$1,960 which cancels the credit of like amount posted from the voucher register to the Accounts Payable controlling account. The current debit posting to the Purchase Discount account cancels the credit of like amount reflected in the summary posting of the purchase discount column from the voucher register on voucher 5113.

(e) *Vouchered Invoice Used to Offset Customer's Account.*

A purchase of \$2,000, subject to terms of 2/10—n/30, was made from the Longhorn Leather Company. One week after the receipt of the invoice for \$2,000, a sale amounting to \$647.55 was made on account to the same company.

The entry in the voucher register would be the same as shown in the four preceding illustrations for voucher 5113. The entry in the sales journal would be as follows:

Sales Journal

	Accounts Receivable	Sales		
		Dept. A	Dept. B	Dept. C
Longhorn Leather Company	\$647 55	\$647 55		

Settlement of the account payable was made in time to take advantage of the discount, after applying the account receivable balance with the same concern as an offset. It would be necessary to cancel voucher 5113, and make up a new voucher. An entry in the voucher register would record the transaction as follows:

Voucher Register

Voucher Number	Accounts Payable	Purchase Discount	Pur- chases	Sundry		
				Dr.	Cr.	Account
5406	\$1,312.45			\$1,960.00	\$647.55	Accounts Payable Longhorn Leather Company (A.R.)

The sundry debit posting of \$1,960 to the Accounts Payable controlling account cancels the credit of \$1,960 on voucher 5113. The difference between the voucher 5113 and the amount the Longhorn Leather Company owes is \$1,312.45, the amount of voucher 5406. The sundry credit of \$647.55 must be posted to the individual customer's account in the accounts receivable ledger as well as to the Accounts Receivable controlling account in the general ledger.

11. Purchases Discounts and the Voucher System.

The principle as to the location of the purchase discount column has already been mentioned. If the practice is invariably to take all purchase discounts, they should be listed in the voucher register; if irregularly taken, they should be listed in the check register.

There is one disadvantage in recording purchase discounts in advance of actually earning them. At the end of each accounting period, an adjustment must be made for all purchase discounts entered in the voucher register applicable to invoices which have not yet been paid. The necessary adjusting entry is made as follows:

General Journal

General Ledger			Accounts Payable
\$17	57	Purchase Discounts Accounts Payable (control) To show full liabilities on unpaid vouchers at the date of closing	\$17 57

At the beginning of the following period the same entry is reversed. The reversing entry automatically adjusts the Accounts Payable controlling account in accordance with the discounts earned on invoices vouchered in one period and paid in the following period.

Some accounting systems have been designed to show the amount of purchase discount lost. The method probably has some merit if the company's financial condition is such that it could easily take advantage of all discounts. The failure to take any discounts pins the responsibility on the person having charge of the payment to creditors. Such a plan would also show what amount of discounts was lost periodically as a result of not having a sufficient amount of cash on hand to pay all the invoices within the discount period. Under this scheme, the expenses are recorded in the voucher register at a net figure with full liability for accounts payable, and a debit to the Purchase Discount account for the difference. A section of a voucher register with columns for the above scheme appears as follows:

Voucher Register

Voucher Number	Accounts Payable (Cr.)	Purchase Discount (Dr.)	Purchases (Dr.)
	\$13,647 19	\$473 10	\$13,174 09

As the vouchered invoices are paid, the discounts taken are recorded in the check register. If the discounts taken amounted to \$256.90 on the accounts payable of \$13,647.19, all of which were paid, then, discounts in the amount of \$216.20 were lost.

Check Register

		Voucher Number	Check No.	Accounts Payable (Dr.)	Purchase Discount (Cr.)	Cash (Cr.)
				\$13,647 19	\$256 90	\$13,390 29

The Purchase Discounts account reflects the discount lost after postings have been made from both journals.

Purchase Discounts

Voucher Register	\$473 10	Cash Disbursements	\$256 90
		Discounts Lost	216 20
	\$473 10		\$473 10

12. Advantages of the Voucher System.

One of the chief advantages of the voucher system is that it makes possible the establishment of various cost accounting controls. Some of these controls are described in Chaps. XIX and XX. Other possible advantages are:

1. Expenditures regardless of their nature are recorded in one journal.
2. Eliminates the necessity for a creditor's ledger.
3. Receipts for paid bills are furnished when the voucher check system is used.
4. Constitutes an effective control and check over the spending agencies of the business by requiring approval of different

parties for purchase price, proper classification of expenditures, and payment of the voucher.

In addition to the above-listed advantages, the voucher register establishes control accounts for raw materials or stores, manufacturing, distribution, and administrative expenses. The details of these controls are found in the operating departments of the plant. The manner in which these controls function within the operating departments is briefly described in Chaps. XIX and XX, but the cost details must be deferred until the operation of a cost system is described in Vol. II.

Questions

1. Define a voucher.
2. What facts are attested to by a voucher?
3. What is an internal check?
4. Describe some systems for numbering vouchers.
5. Why should the vouchers covering expenditures for each separate month be identified by some scheme of numbering?
6. When are vouchers prepared?
7. Of what use is a voucher after it has been prepared?
8. Enumerate the major plant activities, in their order, which take place prior to the preparation of a voucher.
9. Contrast the voucher register having many detailed expense columns with one having expense controlling account columns.
10. What is the function of a voucher summary sheet?
11. What use is made of the operating ledger?
12. Describe a voucher check and illustrate its use.
13. What is a voucher stamp and when is it used?
14. What is a check register?
15. What is the function of a voucher index of creditors?
16. What fact determines whether the purchase discount column should appear in the voucher register or check register, or in both books?
17. What are some peculiar problems met with in connection with some vouchered invoices?
18. What are considered the most important advantages of a voucher system?

CHAPTER XVIII

COST ELEMENTS

1. Accounting for a Manufacturing Concern.

Many references have been made to the manufacturing plant in connection with different accounting principles and practices. There are certain peculiar and particular developments which must be described in detail in order to obtain an adequate understanding of factory costs. For example, a manufacturing plant usually has three different types of inventories as compared with the merchandise inventory of a trading concern.

Expenses, entirely separate from selling and administrative expenses, called "manufacturing overhead expenses," arise in the plant. Before developing the principle of manufacturing control, it is necessary to have an understanding of what is meant by manufacturing overhead expense and plant inventories.

2. Manufacturing Cost.

Manufacturing cost is divided into three divisions termed the "elements of cost." These elements are:

1. Raw Materials.
2. Direct Labor.
3. Manufacturing Overhead or Indirect Expenses.

Different products require different portions of these respective elements. Two decades ago the bulk of the cost of production was comprised of material and direct labor. The advent of machinery since that time has displaced men to a tremendous degree. As a result, labor costs have decreased while overhead costs have increased in proportion.

3. Raw Material—an Element of Cost.

Material cost comprises the cost of all raw materials entering directly into the production of a commodity. There is particular significance attached to the phrase "directly into."

Some materials enter indirectly into the manufacture of a product and are included in the overhead or indirect expense. The bulk of material used in production, however, is a direct charge. Raw material is the known quantity which enters directly into and is charged to *each* unit of production. An example or two will illustrate the difference between direct and indirect materials.

The number of board feet of lumber that enters into the production of an office desk may be readily ascertained. It might not be practical to figure the cost of the glue to join the various sections of each desk. The lumber represents a direct or raw material cost. The cost of the glue is considered an indirect material, the total cost of which is charged as an indirect expense.

A plant engaged in manufacturing gears and pinions considers as its raw material the steel, iron, or brass blanks which are cut, faced, drilled, and, perhaps, beveled. The cutting compounds used in the cutting and drilling operations are an indirect material charge or overhead expense. It would be impractical to endeavor to determine how many gills or gallons of compound had been consumed while machining specific pieces.

There is much to be said about the control of the raw material inventory. Adequate control of raw material is primarily a cost problem. Both physical and financial control of raw material inventory are based upon a properly designed accounting system.

4. Labor—an Element of Cost.

Workmen who fashion, shape, assemble, or in some other manner work up the raw material into the finished product are called "direct laborers." Direct labor cost comprises the time of all workmen engaged in the operations necessary to produce each unit. Many operations in several departments may be required before the raw material assumes the finished state. Many operators or workmen may be engaged successively toward completion of the product, but as long as they are engaged in some operation, their labor is classified as direct labor.

All plant labor may be divided into two classes, direct and indirect. Indirect labor is always classified as an over-

head expense. Indirect labor represents the time of the workmen in a plant any portion of which cannot be allocated easily to a particular unit or article produced. This class of workmen includes the cleaners, sweepers, labor gang, oilers, repairmen, power house attendants, storeroom laborers and clerks, foremen and superintendents, etc.

An illustration will clearly show the distinction between the two types of factory workmen. Contrast direct labor with indirect labor in a machine shop. The time of the workmen performing the operations of drilling, boring, slotting, and planing a driving box housing constitutes direct labor. The time spent by the workmen in sweeping up the borings, in oiling, and in repairing the shafting represents indirect labor. The time of the direct laborers is charged, as such, to a specific job or order number. The time of the sweepers, repairmen, and other indirect laborers constitutes an expense charged to all orders pro rata as they pass through the plant. Indirect labor, therefore, becomes an overhead expense.

The control of labor as a cost element should also embody a system of internal check. The chief features of labor control are time keeping, labor distribution, payroll analyses and wage systems. Together they constitute a real problem in cost accounting.

5. Manufacturing Overhead Expense—an Element of Cost.

Manufacturing overhead expense includes all manufacturing expenses exclusive of the raw material and direct labor. Overhead expense represents the cost of all supplies, indirect labor, and miscellaneous manufacturing expense, any part of which can not be allocated readily to any one unit of production or any one type of service. The total cost of these expense items is prorated in some arbitrary manner to the units of goods produced. The process of prorating this cost is termed "overhead" or "burden distribution." Overhead expenses may be variable or relatively fixed.

The variable expenses include such items as indirect labor, heat, light, power, packing supplies, spoiled material, factory supplies and any other manufacturing expense which may vary with output or production.

The relatively fixed overhead expenses include depreciation, taxes, and insurance on the manufacturing plant and equip-

ment. If a concern rents its factory buildings, the rent is considered as a fixed overhead expense. The term "relatively fixed" is used because expenses of this nature are incurred whether productive operations are carried on 24 hours a day or whether the plant is idle. The modification "relatively" is used because any item classified under this heading may fluctuate slightly from year to year, due to causes without the control of the business. The tax rates, the insurance rates, or the rent may vary from year to year, adjusted by the government, by the insurance companies, or by the landlord, yet they represent expense to be paid under any circumstances. Depreciation rates, too, may be changed for some bona fide reason.

The control of overhead expense may be exercised through the use of the manufacturing budget. The principles of applying the overhead cost to the job or the unit of the commodity produced present another real problem in cost accounting described in Vol. II.

The three elements of cost have been outlined briefly in order to portray the result of combining them. Raw material cost, direct labor cost, and manufacturing overhead expense cost are combined to ascertain the cost of goods manufactured. The cost of goods manufactured as compiled by a manufacturing plant is comparable to the purchases cost in a trading concern. The cost of a manufactured article usually cannot be ascertained in so short a period of time as one day. Some costs may be determined daily, but in the majority of diversified industries it requires several days, possibly weeks, or, in some cases, months, before the final cost of production is known. This leads to the question of the second inventory peculiar to the manufacturing industry, known as the "work in process inventory."

6. The Work in Process Inventory.

Where a period of several days or more is required to complete an order, some plan must be provided to keep a record of the elements of cost which accumulate during the process of manufacture. The combination of the direct labor applied in working up the raw material together with an added amount of overhead expense incurred from day to day gives a value to the goods in a partially finished stage. These elements of

cost accumulating from day to day, prior to completion of the units of product, create the value known as the "work in process inventory." This inventory is peculiar to manufacturing concerns where the operations to complete the product require several days or more. In some manufacturing establishments there is no work in process inventory problem, due to the small span of time necessary between the time the raw material enters the production until it becomes finished goods. Illustrations of such manufacturing industries are ice plants, steam-heat plants, blast furnaces, butter plants, and coal mines. In industries of this nature only a fraction of the 24-hour day is required to convert the raw material into the finished product.

In the majority of industries, however, the work in process inventory presents an important problem. Important because there must be a record of accumulated cost of material, labor, and overhead expenses during the space of time intervening between the raw material stage and the finished goods stage. Where there is the necessity for assembly, fabrication, aging, or numerous and intricate operations in production, accounting for the work in process inventory is advisable. Typical illustrations in which a work in process inventory would be found are furniture, machinery, steel and iron products, automobile, clay products, and electrical equipment plants. It is imperative to account for the work in process inventory on the books in order to have a capital account representing a value into which the expenses or elements of cost may be transferred as they are incurred. In the work in process stage of production, expenses are being converted into a current asset. The goods in process inventory is a running or perpetual inventory of the elements of cost which have entered into production, but have not been completed in the form of finished goods. Thus, at the close of any month or accounting period when the financial statements are prepared, the value of the work in process is readily available. In reality it is composed of elements of cost or expense capitalized. The balance in the Work in Process Inventory account, while shown as an asset at the end of any accounting period, really represents a deferment of expense to the next accounting period. What is considered the new inventory at the close of one month or

fiscal period, becomes the old inventory (an expense) at the beginning of the next month or fiscal period. It is important to visualize the manner in which the work in process functions within the plant.

An illustration will convey the manner in which the work in process inventory is handled. In the beginning, certain quantities of raw material, direct labor, and overhead expenses are charged into production (Work in Process Inventory account), sufficient to produce five completed steel water tanks during June, and three partially completed tanks at the end of the same month. The three tanks comprise the Work in Process Inventory account balance at June 30. During July, additional amounts of raw material, direct labor, and overhead expense are charged to the Work in Process Inventory account to complete the three partially completed tanks on hand at the close of the preceding month. A sufficient amount of the elements of cost also was added during July entirely to complete six more tanks and partially to complete four others. The nine tanks completed during July are transferred to the Finished Goods Inventory account, while the four partially completed tanks represent the Work in Process Inventory account balance at July 31. The flow of goods from the raw material stage through the work in process inventory to the finished goods inventory is shown in Chart 7.

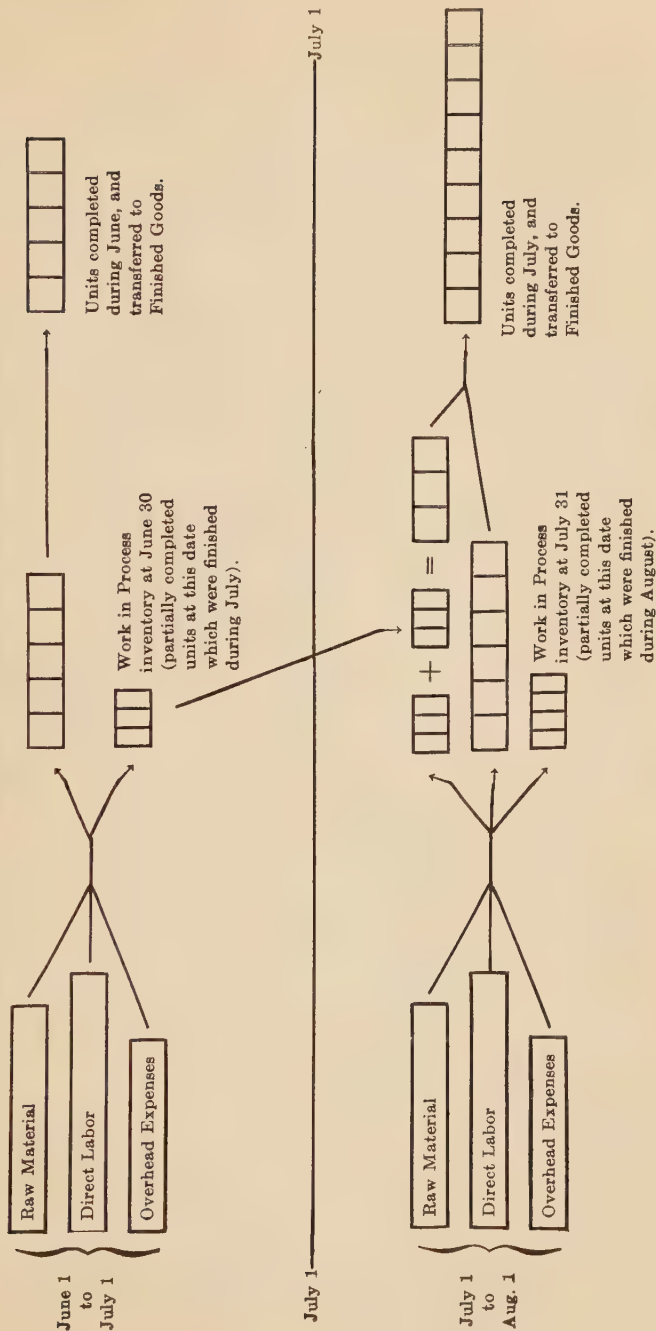
The control of the Work in Process Inventory account results from properly recording the three elements of cost entering into production. This is fundamentally a cost accounting procedure to be covered in Vol. II.

7. The Finished Goods Inventory.

As units of product are completed, they are transferred from the Work in Process account to the Finished Goods account. The nature of the industry influences the volume of finished goods inventory on hand at any time. A plant working on specific job orders will usually have a very small finished goods inventory. A process order plant where goods are made for stock may have a large investment tied up in finished goods inventory.

The volume control of finished goods inventory is brought about through a cooperation of the sales and production departments. The existence of customers orders of the probability

CHART 7.—THE OPERATION OF THE WORK IN PROCESS INVENTORY



of obtaining orders gave both production and the finished goods inventory investment.

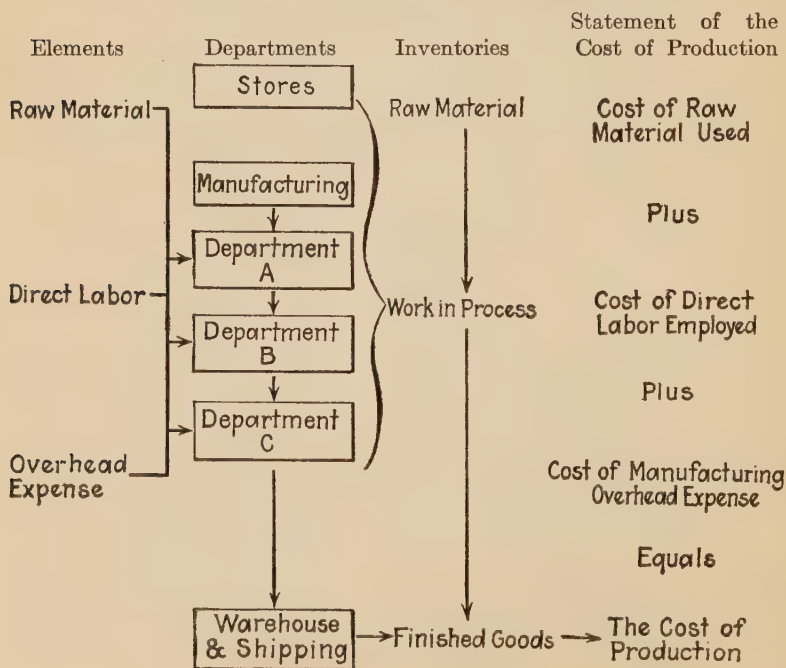
The nature of the accounting system in operation within the plant determines the entries made when the finished units are sold to customers. The entries under a cost system obviously differ from those in a plant where no cost system exists. Chapter XXIV illustrates the comparison of journal entries pertaining to the elements of cost and inventories under non-cost and cost systems.

The brief presentation of the principles peculiar to factory control, as described in this chapter, paves the way for an understanding of the development of other factory controls merging into revenue accounts, which is the stepping stone to cost accounting.

8. Ascertaining the Cost of Production.

Accounting for raw materials, direct labor, and overhead expense, the three elements of cost, as well as for the raw material, work in process, and finished goods inventories per-

CHART 8.—RELATION OF COST ELEMENTS



mits the determination of the cost of production. The cost of manufacturing is usually set up on a separate statement as shown in Chap. XXV. At this point, however, it is important that the student should have an understanding of the relationship between the elements of cost, the three inventories, and the cost of production. The chart on p. 286 graphically portrays this relationship.

Questions

1. What are the elements of manufacturing cost?
2. What is included under the heading of raw material?
3. Contrast raw materials with factory supplies.
4. Differentiate between direct labor and indirect labor.
5. What is the nature of manufacturing overhead expense?
6. Contrast variable overhead expenses with relatively fixed overhead expenses.
7. What results when the three elements of cost are combined?
8. What is meant by work in process inventory?
9. What types of manufacturing establishments are not concerned with the work in process inventory?
10. What is the composition of the work in process inventory at the close of any accounting period?
11. Describe the finished goods inventory.
12. In what manner does the finished goods inventory differ from the merchandise inventory?

CHAPTER XIX

INVENTORY CONTROLS

1. The Importance of Manufacturing Controlling Accounts.

Controlling accounts, as was illustrated in Chap. XVII, are the basis of a modern cost accounting system. The use of controlling accounts permits segregation of accounts similar in nature in separate ledgers. The subsidiary ledgers may contain as many detailed accounts as necessary without need for a general ledger with hundreds of accounts. Flexibility is possible with the use of controlling accounts appearing in the voucher register, and a cost system may be designed to meet any requirement. Through the use of controlling accounts, responsibility is centered and fixed on certain specifically named individuals. The controlling accounts afford the management completed financial statements and cost reports much sooner after the closing date than would be possible without such accounts.

Control accounts, therefore, are established for two main reasons:

1. To organize the accounting system so that a maximum of transactions may be speedily and accurately accounted for, with a minimum of the detail entering the general ledger.

2. To set up managerial controls, through minor plant executives, whereby the responsibility for operations, material, labor, and expense costs is ascertained and fixed departmentally.

Some of the most important controlling accounts found on the books of a manufacturing plant are as follows:

1. Inventories.
2. Expense.
3. Equipment.
4. Payrolls.

Description of controlling accounts for inventories is given in the following order:

1. Raw Materials or Stores.

2. Work in Process.
3. Finished Goods.

2. The Raw Material or Stores Controlling Account.

a. Advantages of the Raw Materials Perpetual Inventory.

In a manufacturing plant of even small size, it is almost imperative that a perpetual inventory be in operation. A perpetual inventory of raw materials serves several purposes:

1. It affords a record of the quantity of each item of stores on hand at any time, which record is important from a production point of view.
2. It furnishes the value of the stores on hand at any time, which figure is necessary in preparing monthly financial statements.
3. It permits a verification of the quantity on hand as a means of spotting leakage and pilferage.
4. It makes the classification of stores a necessity, a practice conducive to better stores management.
5. It prevents the overstocking of raw materials, which, in turn, prevents an overinvestment of capital being tied up in stores.

b. The Raw Materials Controlling Account.

The Raw Materials controlling account is built up from postings from the following sources.

Debits from the:

- (1) *Voucher register* for the value of all raw materials purchased.
- (2) *General journal or journal vouchers* for any adjustments whereby any value is charged back into raw materials.

Credits from the:

- (1) *Raw materials requisitions* for the cost of all raw materials charged into production or goods in process.
- (2) *General journal or journal vouchers* for any adjustments whereby any value is credited to raw materials.

The chief source of the debits to the Raw Materials controlling account is from the voucher register. When raw materials are received the invoices are vouchered and the cost price is recorded in the purchases column. For the purpose of illus-

FORM 60

Voucher Register

Date	Payable To	Voucher Number	Paid		Accounts Payable	Purchase Discount	Purchases Raw Materials
			Date	Check			
July 1	New York Supply Co.	7009	July 5	977	\$1,544 80	\$15 60	\$1,560 40
4	Moline Screw Co.	7020			774 22		774 22
7	Oakland & Merrill	7027			56 75		56 75
12	J. M. Runger and Co.	7036	" 17	995	171 60	3 50	175 10
20	Morrell and Co.	7043	" 22	1009	475 75	7 25	483 00
27	National Supply Co.	7059	" 31	1032	2,994 25	30 25	3,024 50
31	Jones and Brown	7067			210 10		210 10
					\$6,227 47	\$56 60	\$6,284 07

trating the Raw Materials controlling account, the vouchers on page 290 were made up for invoices covering raw materials:

At the end of each month the total cost of raw materials, as an element of manufacturing cost, is definitely known. In the preceding illustration the total of \$6,284.07 is posted as a debit to the Raw Materials controlling account in the general ledger.

Sundry debits which are posted to the Raw Materials controlling account from the general journal or journal voucher are as follows:

1. Salvaged material credited to a production order.
2. Excess material withdrawn for a production order and returned.
3. Items made by the plant on a shop order for use instead of purchasing in the open market.

The chief source of the credits to the Raw Materials controlling account, however, is from the requisitions for materials withdrawn from the storeroom.

A stores requisition is an order signed by a foreman or some other authorized person directing the storekeeper to deliver the amount of raw materials as specified. At the end of each day the requisitions are turned over to the accounting department where they are priced by a clerk. The price is obtained from the stores record ledger in which the perpetual inventory and unit prices are shown.

FORM 61
Stores Requisition

No. G1	Date July 1, 19		
Storekeeper:			
Please furnish the following materials and charge to Order No. 54721			
Amount	Items	Unit Price	Total
2 gal.	Black paint	\$4.25	\$8.50
Signature J. W. Hathaway			

A summary credit posting is made at the end of each month to the Raw Materials account in the general ledger for the total cost of all raw materials issued on the many requisitions.

Sundry credits are posted to the Raw Materials account from the general journal or journal vouchers. These credits will arise chiefly from returns and allowances on purchases of raw materials.

The balance in the Raw Materials account at the end of any month, after all postings have been made to the account for the month, represents the value of raw materials on hand. This balance controls the perpetual inventory figure obtained from the stores or raw materials ledger. It is the same balance which is used at the end of the month as the new inventory value in preparation of the statement of income, profit and loss, and the balance sheet.

c. The Perpetual Inventory of Raw Materials.

A perpetual inventory of raw materials and supplies necessitates a record of each individual item kept in the storeroom. The raw material record may consist of a loose-leaf ledger system or a stock-card system. For each individual item of raw materials kept in stock, a separate sheet or stores ledger card records the following information.

1. Quantity and value on hand at the beginning of the month.
2. Quantity due on back orders.
3. Quantity ordered.
4. Order number.
5. Quantity received.
6. Price of last shipment received.
7. Quantity issued or used.
8. Price of units issued.
9. Quantity on hand at the end of the month.
10. Price of units on hand at the end of the month.
11. Value of units on hand at the end of the month.
12. On release.

The last item, "on release," probably needs some explanation because of its growing usage in industry. Due to anticipation of increase in cost, scarcity, or a favorable price, plants make arrangements to buy a year's supply, or more, on one order. Such an order provides for the release of the goods

Form 62

Stores Ledger Card

Stock Item	3/4" Standard Thread Hexagon Nuts
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16
17	17
18	18
19	19
20	20
21	21
22	22
23	23
24	24
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42	42
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44	44
45	45
46	46
47	47
48	48
49	49
50	50
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52	52
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57	57
58	58
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68	68
69	69
70	70
71	71
72	72
73	73
74	74
75	75
76	76
77	77
78	78
79	79
80	80
81	81
82	82
83	83
84	84
85	85
86	86
87	87
88	88
89	89
90	90
91	91
92	92
93	93
94	94
95	95
96	96
97	97
98	98
99	99
100	100

Standard Stock, B/P #5982

Classification No.

Unit..... Pounds.....

Store Location Basement Section J Bin No. 6

Section J

Bin No. 8

[illegible]

by the vendor as the buyer specifies. The column headed "on release" registers the quantity still due. The column labeled "amount due on back orders" may record the quantity to be released, if no other small orders are outstanding.

A monthly summary of the value of all material on hand, as shown in the stores ledger, should agree with the balance in the Raw Materials account. The stores ledger is thereby controlled by the Raw Materials account in the general ledger.

There are two important problems ever present in connection with the control of raw materials from an accounting viewpoint. The first problem is that of charging the material issued at the correct unit price. The other problem is that of keeping the stores ledger record in agreement with the number of units actually on hand.

There are two different methods of computing the unit price at which raw materials should be charged into work in process. Where frequent purchases are made at varying prices, care must be taken to show that the total cost of goods charged into Raw Materials account is again credited for like amount when withdrawn from the storeroom and charged into production.

The First-In, First-Out method provides for an accurate record. This method functions as follows:

January purchases.....	200 units @ 0.25	\$50.00
February purchases.....	200 units @ 0.26	52.00
March purchases.....	300 units @ 0.255	76.50

The quantity charged into production at the different prices would be as follows:

January requisitions.....	175 units @ 0.25	\$43.75
February requisitions.....	25 units @ 0.25	6.25
February requisitions.....	120 units @ 0.26	31.20
March requisitions.....	70 units @ 0.26	18.20

The inventory of these units, at Mar. 31, would consist of the following:

10 units @ 0.26.....	\$ 2.60
300 units @ 0.255.....	<u>76.50</u>
	\$79.10

Sometimes the nature of the raw materials or supply item is such that it is not expedient to use the first-in, first-out

method. The unit price may be computed by the Moving Average method as illustrated in form 62. This means that the unit price is weighted after each purchase. Each new unit price is applied to units used in production immediately after a new purchase is received. Such a plan operates in the following manner.

				New Unit Price
January purchases.....	200 units	@ 0.25	\$50.00	0.25
January requisitions.....	175	" @ 0.25	43.75	
January 31 balance.....	25	" @ 0.25	\$ 6.25	
February purchases.....	200	" @ 0.26	52.00	
	225	" @ 0.25888	\$58.25	0.25888
February requisitions.....	145	" @ 0.25888	37.54	
February 28 balance.....	80	" @ 0.25888	20.71	
March purchases.....	300	" @ 0.255	76.50	
	380	" @ 0.25581	\$97.21	0.25581
March requisitions.....	70	" @ 0.25581	17.91	
March 31 balance.....	310	" @ 0.25581	\$79.30	

A comparison of the first-in, first-out method with the moving average method of pricing the inventory shows a slight difference in the final inventory. The first method which results in a final inventory of \$79.10 is accurate. The latter method slightly overstates the value of the inventory.

One of the functions of the storekeeper is to see that frequent periodical counts are made of each different item in stock. This actual count, known as the "physical inventory check," is compared with the perpetual inventory or book record. The actual count should agree with the stock record. If an actual shortage exists, it may have resulted from one of the following reasons:

1. Material has been removed without a requisition having been made for it.
2. Requisition has been lost before record of withdrawal has been made in stores ledger.
3. Material placed in the wrong bin or container.

4. Requisition has been credited against the wrong stock record.

In either of the first two cases, the shortage may be taken care of by an inventory loss adjustment described in Chap. IX. If the shortage has resulted from misplaced material, subsequent checking will disclose this fact. If the discrepancy has resulted from the fourth reason mentioned above, it is more difficult to ascertain.

If a physical count discloses an amount of any particular item in excess of the perpetual record, it may be due to one of the following reasons:

1. Material received was not charged to the perpetual inventory or material record card.

2. Requisition for material issued has been credited erroneously against the stores ledger record card.

3. Material placed in the wrong bin or container.

Discrepancies resulting from either of the first two errors are not so easy to ascertain. In the latter case, checking of the bin in which the material was placed in error will disclose the error.

3. The Work in Process Controlling Account.

a. The Necessity for a Work in Process Control.

Where production in any plant is of such a nature that a work in process inventory exists, some record must be kept to ascertain its money value. A controlling account in the general ledger for Work in Process will reflect the accumulated value of the elements of cost on partially completed units at any time the postings from the books of original entry are complete. It is necessary to know the work in process inventory value at the end of each month for use in the preparation of the financial statements.

b. The Operation of the Work in Process Controlling Account.

A description of a Work in Process Inventory controlling account, first of all, implies the existence of a cost system as an integral part of the general accounting system. The controlling account develops a debit balance as a result of charges from the following sources.

Debits from the:

- (1) *Three cost elements, namely,*
 - (a) Raw materials requisitions.
 - (b) Direct labor wage tickets.
 - (c) Overhead expense rates.

(2) *General journal or journal vouchers* for any adjustments whereby any value is charged to the Work in Process Inventory account.

Credits from the:

- (1) *General journal or journal voucher,*
 - (a) For the money value of all completed units transferred to the Finished Goods Inventory account, or
 - (b) Any adjustment whereby any value is credited to the Work in Process Inventory account.

The bulk of the charges to the Work in Process controlling account are posted from the daily, weekly, or monthly summaries prepared from the material requisitions, wage tickets and overhead expense applicable to the production orders.

The chief credits to this controlling account represent the cost of the various completed jobs or orders transferred to the Finished Goods Inventory controlling account. An illustration of this entry, which is made in the general journal, or on a journal voucher, is as follows:

General Journal

Finished Goods	General Ledger		General Ledger	Work in Process
\$876 78		Finished Goods		
		Work in Process		\$876 78
		To transfer the cost of completed goods to the sales department		

The debit balance in the Work in Process account at the end of any month after all postings have been completed constitutes the value of the three elements of cost charged into production, representing the accumulated cost of uncompleted units or jobs. This balance controls the perpetual or running inventory of uncompleted jobs or units of a process order. A process order is an order run through a plant calling

for the production of many units of identical nature. The production of 350 10'' $\times$ 10'' $\times$ 30'' mahogany finish radio cabinets is an illustration of a process order. The balance in the Work in Process controlling account at the end of any accounting period is the value used in the preparation of the statement of income, profit and loss, and the balance sheet.

c. The Running Inventory of Work in Process.

A running or perpetual inventory of work in process, controlled by the general ledger account, comprises a subsidiary record of each job or order in process. The subsidiary record usually is in loose card form. A card is made up and given a consecutive number for each job. As the raw material is requisitioned, direct labor employed, and overhead expenses are allocated to each order from day to day, a record is made on the card. When an order is completed, its actual cost is readily computed.

A summary of the accumulated charges to the uncompleted orders at the end of the month should equal the balance in the Work in Process Inventory controlling account. If the two amounts are not in agreement, the difference is usually the result of neglecting to make the proper records. In the event of a discrepancy, it necessitates detailed checking from the material requisitions, wage tickets, and overhead charges to the production orders. Another reason for a difference between the controlling account and its subsidiary record may result from failure to credit the Work in Process controlling account with a completed order.

A Work in Process Inventory controlling account does not exist in a manufacturing plant which does not have a cost accounting system, or in a plant having cost records which do not tie in with the general books. Under these conditions, the value of the work in process must be estimated, or computed from the data accumulated on separate records.

4. The Finished Goods Inventory Controlling Account.

a. The Necessity for a Finished Goods Inventory Control.

As explained in Chap. XVIII, the nature of the manufacturing plant determines the type of finished goods inventory record and its control. A controlling account is of utmost

importance, in any case, for the purpose of supplying a monthly balance for use in the monthly financial statements. In the absence of a Finished Goods controlling account, or a perpetual record, the monthly inventory value must be ascertained by one of the following methods:

1. Actual count with accompanying unit pricing, price extension, and recapitulation.

2. Gross profit method.

Either of the above methods is inferior to the perpetual inventory record controlled by a general ledger controlling account. In the first case, the time element makes it prohibitive, if a value is wanted monthly. The second method may be used to compute the value in a few minutes' time, but the result is only an estimate.

The value of the finished goods on hand at the end of any period may be arrived at by the Gross Profit method in the following manner. Since most business concerns sell their goods marked on from cost at a fairly uniform percentage rate from year to year, the rate of gross profit will fluctuate very slightly during the same periods. Therefore, by multiplying the average rate of gross profit for a period of years by the known net sales for any given period, the gross profit for that period may be estimated. This estimated gross profit deducted from the sales gives the estimated cost of goods sold. Deduct from the cost of goods available for sale the cost of goods sold and the estimated new inventory is the difference.

From a brief review of substitute methods for ascertaining the finished goods inventory value, it may be rightly reasoned that the only practical method is the perpetual inventory plan.

b. The Finished Goods Inventory Controlling Account.

When a perpetual inventory of finished goods is maintained, it may be controlled by a controlling account of similar title in the general ledger.

The postings both debit and credit to the controlling account come from the general journal or journal voucher as follows:

Debits for:

- (1) The cost of all complete units transferred from the Work in Process Inventory account.

- (2) Any adjustments whereby any value is debited to the finished goods inventory.

Credits for:

- (1) The cost (to produce) of all goods shipped to customers.
- (2) Any adjustments whereby any value is credited to the finished goods inventory.

The entry shown on page 297 of this chapter illustrates the entry which constitutes the bulk of the debits to the controlling account. The nature of the majority of credit postings to the Finished Goods controlling account, coming from the general journal or journal vouchers, is as follows:

General Journal					
General Ledger				Finished Goods	
\$876	78		Cost of Sales Finished Goods To transfer the cost of completed orders for goods shipped to cus- tomers	\$876	78

The debit balance in the Finished Goods Inventory account at the close of any month represents the value of completed units or orders which have not been shipped to customers. As soon as an order is shipped, its cost is used as the basis for making an entry shown in the preceding illustration. At the same time the order is shipped and the Finished Goods controlling account is credited, another entry is made charging the customer and crediting Sales account *for the selling price*. This plan is based upon the existence of a cost system (see Sec. 9, Chap. XXIV). The debit balance in the Finished Goods Inventory controlling account at the close of the month is the figure used in the monthly statement of income, profit and loss, and the balance sheet.

c. The Perpetual Inventory of Finished Goods.

The nature of the product manufactured determines the nature of the inventory record of finished goods. If the plant operates on the job-order basis, where each order varies in nature and is produced only after the customer has placed his

order, then no elaborate subsidiary record of finished goods is necessary.

The costs of individual orders covering finished goods which have not been shipped represent the value of finished goods on hand, and should be in agreement with the Finished Goods Inventory controlling account. Such a subsidiary record would suffice for a job-order production plant where separate records are kept showing the cost of each job.

In a process order plant where several different products are manufactured, a subsidiary record similar to the raw materials or store ledger should be maintained. It is sometimes termed the "warehouse ledger." A separate sheet for each different item records the monthly receipts from the factory and the unit cost, as well as shipments to customers. The value of the finished goods on hand at the end of each month will thus be shown in the finished goods or warehouse ledger. A recapitulation of the value of all finished goods on hand at the end of the month should be in agreement with the Finished Goods controlling account in the general ledger.

If the finished goods ledger or subsidiary record is not in agreement with the controlling account, it may be the result of the following conditions:

1. Error of commission or omission in the finished goods ledger in recording receipts and shipment of units.
2. Error in using the wrong cost in crediting the Finished Goods account for goods shipped.

An actual count of all finished goods stock should be made periodically to verify the controlling account figure. Usually, there is not any material discrepancy unless there has been shrinkage by theft. Occasionally a difference may result from clerical error and, if such is the case, the difference must be located by checking the receipts with the finished order costs; and the shipments with the customers' invoices.

Questions

1. Name some controlling accounts peculiar to a manufacturing concern.
2. What are the benefits derived from controlling accounts used in a manufacturing concern?
3. What are the advantages of a perpetual inventory?
4. What are the postings made to the raw materials controlling account?

5. Describe the nature and use of a stores requisition.
6. The balance in the raw materials inventory controlling account controls what subsidiary record?
7. Describe the operation of the stores ledger.
8. What would be the procedure if the perpetual inventory record did not agree with the controlling account? What would cause a variance between the two records?
9. What is the problem of unit prices in connection with a perpetual inventory?
10. What would be the procedure in event a physical count or check of the raw materials divulged a shortage when compared with the perpetual inventory record?
11. What are the sources of the postings made to the Work in Process Inventory controlling account?
12. The use of a Work in Process controlling account implies the existence of what in the manufacturing concern?
13. How is the Work in Process controlling account balance proved?
14. What is the nature of the Work in Process controlling account?
15. What are the sources of the postings made to the Finished Goods Inventory controlling account?
16. In the absence of a Finished Goods Inventory controlling account, how can this inventory value be ascertained?
17. Describe the finished goods inventory subsidiary record.
18. What may be the cause of the discrepancy between the finished goods inventory subsidiary record and the balance in the controlling account?

CHAPTER XX

EXPENSE CONTROLS

1. The Necessity for Expense Controls.

Many different expense accounts are required by a manufacturing plant to obtain the proper measure of managerial control. The number of expense accounts necessary to obtain adequate control in any plant depends upon the nature of the product manufactured and the size of the plant. The reasons for establishing expense controlling accounts are chiefly to furnish figures for budget control and to remove from the general ledger many bulky accounts.

Expense budgets are established to obtain control over various departments, foremen, minor executives, and other divisions or groups having expense-incurring responsibilities. Control over raw material and direct labor may be quite easily and effectively exercised through standards and measured operations. A greater problem is presented, however, in obtaining control over expenditures for the many manufacturing, selling, and general administrative expense items. Proper control over expense consists of keeping within estimates set up in advance of incurring the actual expenditures. Setting up a preestimated amount for various expenses is termed a Budget for Expense Expenditure. The expense accounts record the actual expenditures as made from day to day. Daily, weekly, or monthly comparison of actual expenditures with the budgeted figure gives the management an effective means of control over expenses.

The principle determining whether there should be controlling accounts for manufacturing, selling, and general administrative expenses is the number of accounts necessary to give the measure of detail wanted within these respective divisions of expense. A fundamental principle, in this connection, is that the number of accounts kept in the general ledger should always be kept at the lowest possible minimum. By so doing, two time-saving features are effected with the

use of controlling accounts. First, many postings to the general ledger are eliminated, thus reducing the possibility of error. Secondly, with fewer general ledger accounts, the trial balance may be obtained with greater ease and rapidity. This is of importance when it is remembered that the preparation of monthly financial statements depends upon, first, obtaining a trial balance.

The expense controlling accounts described in this chapter are as follows:

1. Manufacturing Overhead Expense.
2. Selling or Distribution Expense.
3. General and Administrative Expense.

2. Manufacturing Cost Differentiated from Expense.

A definite distinction must be made between manufacturing cost and manufacturing overhead expense. Manufacturing cost is composed of the three elements of cost, namely, raw materials, direct labor, and overhead expenses. This concept of *cost* must never be confused with manufacturing overhead expense.

Manufacturing overhead expense is only one of the elements of cost, and is purely an operating item. It is sometimes known as "overhead expense" or "burden." It is composed of many items of a varied nature. These miscellaneous manufacturing overhead expense items enter indirectly into the cost of the product. All of the expenses of production which cannot be allocated to any one unit of product are classified as manufacturing overhead expense.

All manufacturing plants have certain overhead expense items in common. For example, indirect labor, taxes, depreciation on plant and on factory equipment, factory supplies, power, heat, water, insurance, and repairs are some of the most common overhead expense items incurred by all manufacturing establishments. Certain overhead expense items are peculiar to the individual plant or industry. Chemical laboratory expense would be an overhead expense item peculiar to the rubber plant or asphalt industry. Hospital maintenance would be an overhead expense item in a plant large enough to operate its own hospital, while medical aid would be the term used for this overhead expenditure in a smaller plant.

3. The Manufacturing Overhead Expense Controlling Account.

a. *The Operation of the Manufacturing Overhead Expense Controlling Account.*

The Manufacturing Overhead Expense controlling account is developed from the following sources.

Debits from:

(1) *The voucher register* for the total of all manufacturing overhead expense entered in the column labeled by the same title.

(2) *The general journal or journal vouchers* for any adjustments whereby any amount is charged to manufacturing overhead expense.

Credits from:

(1) *The general journal or journal vouchers* for any adjustments whereby any amount is credited to manufacturing overhead expense.

After the regular routine has been completed pertaining to the checking of the overhead expense items purchased and received, a voucher is prepared. The vouchers are then entered in the manufacturing overhead expense column of the voucher register. At the end of the month the column total is posted as a debit to the general ledger controlling account, Manufacturing Overhead Expense.

Debits to the Manufacturing Overhead Expense account, entered in the general journal, arise from estimated charges for depreciation, compensation insurance, repairs, breakage, etc.

Credits to the Manufacturing Overhead Expense controlling account occur infrequently. Errors discovered in the classification of expense whereby manufacturing overhead has been erroneously charged necessitate a credit to this controlling account.

At the end of the fiscal period, the debit balance in the controlling account is closed out by a journal entry to the Profit and Loss account where a complete cost accounting system has not been installed. In Vol. II, when more complete cost procedures are discussed, it will be shown how manufacturing overhead expenses are charged into production costs by use of estimated overhead rates.

b. The Manufacturing Overhead Expense Subsidiary Record.

With the use of a Manufacturing Overhead Expense controlling account some subsidiary record must be available to record in detail the many expense items. A special ledger may be used in which there is a separate account for each different manufacturing expense.

A more recent development has dispensed with the orthodox ledger for expense controlling accounts. The voucher summary sheet conveniently displaces the regular form of expense ledger. Each month a new voucher summary sheet collects the manufacturing overhead expense under separate and specifically labeled expense accounts. After all postings have been made to the summary sheet at the end of the month, each account is totaled, and the totals are then transferred to the operating ledger.

The operating ledger, instead of containing many pages, may consist of one sheet if the number of manufacturing expense accounts is not too great.

The total of all manufacturing overhead expense items under detailed account captions transferred from the voucher summary sheet to the operating ledger, for the first month of the fiscal period, should agree with the balance in the Manufacturing Overhead Expense controlling account. The cumulative total from month to month, in the operating ledger, therefore, should agree with the balance in the controlling account at the end of any given month. In this manner, control is established over the manufacturing overhead expense.

4. The Distribution Expense Controlling Account.

a. The Nature of Distribution Expense.

Distribution expense includes the cost of selling and marketing the manufactured product. Distribution expense is sometimes termed selling or trading expense. Salesmen's salaries and traveling expense, freight and express out, and advertising are some of the most common illustrations of distribution expense. The chart of accounts, at the close of Chap. II, shows a more complete list of distribution expenses.

b. The Distribution Expense Controlling Account.

The controlling account for distribution expense is built up from the following sources.

Debits from:

(1) *The voucher register* for the total of all distribution expenses entered in the column bearing the same caption.

(2) *The general journal or journal vouchers* for any adjustment whereby any amount is charged to distribution expense.

Credits from:

(1) *The general journal or journal vouchers* for any adjustments whereby any amount is credited to distribution expense.

Expenditures classified as distribution expenses on the voucher are entered in the distribution expense column of the voucher register. The total of this column is posted at the end of the month to the Distribution Expense controlling account in the general ledger.

Other sundry debits to the controlling account not involving any present expenditure are made in the general journal or the journal voucher. Examples of such items are depreciation, taxes, and compensation insurance applicable to the sales department.

Credits to the controlling account are relatively few in comparison with the charges. Some credits are occasionally acquired to correct erroneous expense charges to the distribution expense account.

The balance in the Distribution Expense controlling account is closed out at the end of each fiscal period by a general journal entry to the General and Administrative Expense account or to the Profit and Loss account.

c. The Distribution Expense Subsidiary Record.

The detailed record of distribution expenses may be handled in an identical manner with the manufacturing overhead expenses. A subsidiary ledger for these expenses may be used, or the voucher summary sheet and the operating ledger as previously described.

The Distribution Expense control account is proved in the same manner as is the Manufacturing Overhead Expense controlling account.

5. The General and Administrative Expense Controlling Account.

a. The Nature of General and Administrative Expense.

Expenses necessary to carry on the functions of the general supervisory staff of the enterprise are termed general and administrative expenses. Expenses and salaries of the officers and executives of a company who formulate, guide, control, and supervise the general policies come under this division. Incidental expenses in connection with their activities are likewise general and administrative expense charges. A few examples are office supplies, salaries, rent, postage, telephone, telegraph, subscriptions, and dues. A more comprehensive list of expense accounts is shown in the chart of accounts at the close of Chap. II.

b. The General and Administrative Expense Controlling Account.

A debit balance results in the General and Administrative Expense controlling account after postings have been made from the following sources.

Debits from:

(1) *The voucher register* for the total of all general and administrative expenses entered in the column headed by the same title.

(2) *The general journal or journal voucher* for any adjustment whereby any amount is charged to the General and Administrative Expense account.

Credits from:

(1) *The general journal or journal vouchers* for any adjustment whereby any amount is credited to the General and Administrative Expense account.

Expenditures for general and administrative expenses, when vouchered, are entered in the controlling account column for this particular type of expense. The total of this column is posted as a debit at the end of the month to the general ledger controlling account.

Sundry debits to the controlling account from the general journal or journal voucher are for estimated expenses appli-

cable to the administrative and general office division of the plant.

Sundry credits to the controlling account are usually corrections to or refunds on expense items previously charged to the account.

The debit balance of the General and Administrative Expense controlling account, likewise, is closed to the Profit and Loss account at the close of each fiscal period

c. The General and Administrative Expense Subsidiary Record.

A record of the general and administrative expense in detail may be handled along the same plan as provided for the manufacturing and distribution expense groups. The General and Administrative Expense controlling account is proved in the same fashion as is the Manufacturing Overhead Expense controlling account.

6. Other Expense Controlling Accounts.

The size of the plant and the number of service departments required determine the necessity for establishing subcontrolling accounts under the manufacturing, distributing, or administrative divisions. For example, Manufacturing Overhead Expense may have subcontrols for indirect supplies, laboratory, development, power, housing, and many other special activities. The Distribution Expense controlling accounts may be split into subcontrols for selling, warehousing and storage, and delivery expense.

Whatever the subdivisions of controlling accounts may be under a main expense division, the general principles of establishing and maintaining the control are the same. The voucher register may be extended so that a separate column records the charges to each individual expense group. The details are then posted from the voucher to the individual expense account in the operating ledger.

A form of voucher register designed for a multicontrol expense system is illustrated below. Due to space limitations the illustration is limited to manufacturing expense which is typical of the other expense controlling accounts.

The operating ledger, under this plan, would be subdivided in such a manner that the accounts pertaining to any one division would be grouped together. For example, the accounts recording the stores expense might be as follows:

a. Raw Material Purchases.

Inspection and Testing.
Unloading and Unpacking.
Store Clerks' Wages.
Repairs to Storeroom Equipment.

b. Other Stores Expense

Storeroom Supplies and Expense.
Depreciation on Storeroom Equipment.
Watchmen's Wages.
Storekeeper's Salary.
Storekeeper's Traveling Expense.
Storekeeper's Miscellaneous Expense.

The Raw Material Purchases account may be a subcontrolling account, controlling the stores or material ledger. The other expenses of the storeroom are placed under another subcontrolling account named Other Stores Expense.

The column headed Direct Labor as a controlling account may control any number of different direct labor accounts classified as to operations or departments.

The subcontrolling account, Power Plant, under Manufacturing Overhead Expense, will control the expenses pertaining to this indirect service, such as wages of engineers, stokers, oilers, and laborers in the power house; fuel, lubricants, repairs, and maintenance of the power plant.

Maintenance and Repairs as a subcontrolling account controls the labor, material, and other miscellaneous expenses of the entire plant.

The Miscellaneous Factory Expense account as a subcontrol of the manufacturing overhead expense records such expenses as cleaning supplies, ice, and water for drinking purposes, stationery and printed forms, tool room expense if not handled as a separate subcontrol, and other miscellaneous manufacturing expenses not properly classified under more specifically named overhead expense accounts.

Indirect Labor as a subcontrolling account under manufacturing overhead expense has listed under it the various indirect labor expense accounts for those occupations which cannot properly be charged to some more specific expense accounts, such as other stores expense, power plant, etc. Examples of

work classed as indirect labor are general cleaning, sweeping, floating labor gang, etc.

The possibilities of expense control are thus seen to be unlimited with the voucher register as the all important "key" to the establishment of the controls.

Controlling accounts also may be established along departmental lines within the factory. For example, in a foundry the manufacturing process may be divided in accordance with the main operations or steps in production. Separate controlling accounts may be set up for the following:

1. Metals.
2. Melting Department.
3. Molding Department.
4. Core Making Department.
5. Cleaning Department.
6. General Foundry Expense.

The Melting Department controlling account would record the total costs of that department. The voucher summary would provide for a record of the detailed expenses such as:

- a. Labor.
- b. Fuel.
- c. Supplies.
- d. Cupola Relining Labor.
- e. Cupola Relining Material.

Melting labor expense in turn may be split into other subdivisions. The cost of any number of different kinds of labor may be recorded in separate accounts.

7. Operation of Manufacturing Overhead Expense Controlling Account.

The operation of a controlling account for manufacturing overhead expense as described in Sec. 3 of this chapter, is shown in the following illustration:

FORM 64

Voucher Register										V86
Date	Payable to	Voucher Number	Paid		✓	Accounts Payable	Purchase Discount	Manufacturing Overhead Expense		
			Date	Check Number						
19—										
July	2 Knowles Corp.	7000				\$ 353 33	\$ 3 57	\$ 356 90		
	3 U. S. Supply Co.	7001				46 73	47	47 20		
	4 Penn Power Co.	7002				162 23		162 23		
	5 Mahoney and Co.	7003				584 28	11 92	596 20		
	6 Jones and Reed	7004				5 19		5 19		
	7 Standard Iron Corporation	7005				1,860 45	18 79	1,879 24		
	9 Penna. Rwy. Co.	7006				163 47		163 47		
	10 G. D. Piper	7007				207 01	2 09	209 10		
	11 Oakland Fuel Corp.	7008				465 88		465 88		
	13 Sheet Metal Works	7009				4,179 27		4,179 27		
	14 G. R. Esterly	7010				346 50	3 50	350 00		
	17 Western Electric Co.	7011				75 90		75 90		
	19 Payroll	7012				658 12		658 12		
	20 Newlin Iron Co.	7013				98		98		
	21 Lake Lumber Co.	7014				2,171 39	44 31	2,215 70		
	25 R. D. Ayars Co.	7015				917 19	18 72	935 91		
	28 McClamrock Co.	7016				156 90		156 90		
	31 Standard Bolt & Nut Works	7017				4,984 72		4,984 72		
	31 Osler & Nelson	7018				3,929 50	39 69	3,969 19		
	31 B. & O. Rwy.	7019				210 10		210 10		
	31 Payroll	7020				750 00		750 00		
						\$22,229 14	\$143 06	\$22,372 20		

After each voucher covering a manufacturing overhead expense item has been entered in the controlling account column of the voucher register, the same amount is entered in the specific expense account or accounts in the voucher summary.

FORM 65

Voucher Distribution and Summary											
Manufacturing Overhead Expenses								Month July —, 19—			
Factory Supplies				Miscellaneous Factory Expense				Indirect Labor			
Voucher or Journal Number	Amount			Voucher or Journal Number	Amount			Voucher or Journal Number	Amount		
7005	\$	1,879	24	7001	\$47	20		7012	\$	658	12
7009		4,179	27	7004		5 19		7020		750	00
7014		2,215	70	7013		98					
7017		4,984	72	J154	Cr.	98					
7018		3,969	19								
		\$17,228	12			\$52	39			\$1,408	12
Fuel				Royalties				Experimental and Development			
Voucher or Journal Number	Amount			Voucher or Journal Number	Amount			Voucher or Journal Number	Amount		
7008	\$	465	88	7010	\$350	00		7000	\$356	90	
7015		935	91					7003		596	20
		\$1,401	79			\$350	00			\$953	10
Freight In				Repairs to Machinery				Compensation Insurance			
Voucher or Journal Number	Amount			Voucher or Journal Number	Amount			Voucher or Journal Number	Amount		
7006	\$163	47		7011	\$75	90		J154	\$397	24	
7019		210	10								
		\$373	57			\$75	90			\$397	24

FORM 65.—(Continued)

Depreciation on Machinery			Power Purchased			Fire Insurance		
Voucher or Journal Number	Amount		Voucher or Journal Number	Amount		Voucher or Journal Number	Amount	
J154	\$416	93	7002	\$162	23	J154	\$190	17
	\$416	93		\$162	23		\$190	17
Repairs to Buildings			Depreciation on Buildings			Medical Expense		
Voucher or Journal Number	Amount		Voucher or Journal Number	Amount		Voucher or Journal Number	Amount	
7016	\$156	90	J154	\$286	40	7007	\$209	10
	\$156	90		\$286	40		\$209	10

Postings also are shown in the voucher summary which have been made from the general journal. These postings are made from the monthly general journal adjusting entries for manufacturing overhead expense items which cannot be entered properly in the voucher register. Such adjusting journal entries are for prepaid and accrued expense items, corrections, and depreciation. At the same time, the individual amounts shown in each entry also are used to build up a total which is posted to the controlling account. The entries shown in the following general journal might well be shown in journal voucher form. Illustration of the latter form has been omitted because the general journal portrays the assembly of figures for the controlling account in a clearer manner.

The total of each account in the voucher summary, after all postings for the month have been made, is transferred to the operating ledger. The sum of all manufacturing overhead expense accounts in the operating ledger for any given month or months must equal the balance in the control account for the same period of time. The balance for the month of July in the account on page 318 is \$23,661.96, the total manufacturing overhead expense.

FORM 66

General Journal					J154
Distribu- tion Expense	Manufac- turing Overhead Expense	General Ledger	L. F.		
				19— July 31	
	\$397 24	\$ 397 24		Compensation Insurance	
				Reserve for Compensation Insurance	
				Estimated amount based upon July factory payroll	
	416 93	416 93		Depreciation on Machinery	
				Reserve for Depreciation on Machinery	
	286 40	286 40		Depreciation applicable to production for the month of July	
				Depreciation on Building	
				Reserve for Depreciation on Building	
	190 17	190 17		Depreciation applicable to production for the month of July	
				Fire Insurance	
				Prepaid Insurance	
\$0 98				Insurance applicable to production for the month of July	
				Miscellaneous Selling Expenses	\$0 98
				Miscellaneous Factory Expenses	
				To correct an error in distribution of voucher 7013	
\$0 98	\$1,290 74	\$1,290 74			\$0 98

The manufacturing overhead expense controlling account for the preceding illustration is shown as follows:

General Ledger									
Manufacturing Overhead Expense									
19—					19—				
July	31		V86	\$22,372.20	July	31		J154	\$ 0.98
	31		J154	1,290.74		31	Balance		23,661.96
				\$23,662.94					\$23,662.94
Aug.	1	Balance		\$23,661.96					

The debit balance of \$23,661.96 in the control account proves the operating ledger total for the month of July and represents the manufacturing expense for that month.

The only figure for manufacturing overhead expense appearing in the trial balance is the balance in the control account. The operating ledger, however, furnishes the detail which appears in the statement of the cost of production.

Questions

1. What are the advantages of having controlling accounts for different groups of expenses?
2. Differentiate between manufacturing cost and manufacturing expense.
3. What are the postings made to the Manufacturing Overhead Expense controlling account?
4. Describe two different subsidiary records which may be used to record the manufacturing overhead expense detail.
5. What is the nature of distribution expenses?
6. What are the sources of the postings made to the Distribution Expense controlling account?
7. What is the nature of general and administrative expenses?
8. What are the postings made to the General and Administrative Expense controlling account?
9. What disposition is made of the balances in the different expense controlling accounts at the end of the fiscal year?
10. Explain what is meant by a "system of subcontrol accounts." Give an illustration.

CHAPTER XXI

EQUIPMENT CONTROLS

1. The Nature of Equipment Accounts.

Controlling accounts for fixed assets are as important as controlling accounts for expenses. This is true because of the composite nature of most equipment accounts. Accounts covering equipment are so composite in nature that they record many dissimilar items, as, for example, an Office Equipment account. This account records the cost of desks, chairs, typewriters, adding machines, filing cabinets, safes, cash registers, gas stoves, water coolers, and many other items. A Machinery account for a glass factory shows the cost of unloading equipment, automatic presses, carrying out conveyors, fans, motors, leers, storage-conveyor system, drill presses, and lathes. A Building account often includes such different items as frame buildings, temporary structures, and concrete and brick structures. A road contractor includes in his Equipment account steam shovels, ditch diggers, ditch fillers, concrete mixers, steam rollers, road scrapers, dump cars, locomotives, and a host of miscellaneous minor tools. The above illustrations show the complexity that may exist in the variety of items making up equipment accounts. Other equipment accounts, however, may be so highly specialized as to include but one type of equipment. Illustrations of this type are specific equipment accounts for automobile trucks, horses, mules, wagons, shafting and belting, patterns and drawings.

2. The Necessity for Equipment Controlling Accounts.

An equipment account in which is recorded the cost of many units, either similar or dissimilar, presents the following problems which may not be apparent at first thought.

1. New units or replacements may be acquired at any time during the fiscal period.

2. There may be no uniformity as to the cost of even like units, especially if purchased in different years.

3. The different items have different spans of estimated useful life.

4. Units even though purchased at the same date may be sold, scrapped, or traded in at different dates.

5. A different rate of depreciation may apply to various items within the same account.

6. Some provision must be made in order to know when an asset has been completely depreciated.

7. In event of fire, to facilitate insurance adjustment, a detailed record of each unit of equipment damaged or destroyed is invaluable.

To include all of the above information applicable to one particular group of assets within the bounds of a single account would be adding confusion to crowded figures. The cost of an asset is about all that can be placed conveniently in an equipment account. To subdivide the Office Equipment or any other fixed asset account into several other general ledger accounts each recording the cost of a specific type of equipment is not expedient. It is absolutely necessary, on the other hand, to have a record which will readily reveal the information itemized in the above seven statements.

It is necessary to know the cost, the date of purchase and disposal, and the amount of accumulated depreciation on each unit in each equipment account, if accurate depreciation figures are to enter into the cost reports, if accurate financial statements are to be prepared, and to provide for an accurate amount of gain or loss for Federal Income Tax requirements, when disposal is made of each unit of equipment. The general ledger accounts for various groups of equipment cannot, with any degree of completeness, record the required detail. Hence, the necessity of subsidiary records. The various general ledger equipment accounts, in recording the cost of the units only, serve as controlling accounts. They control the equipment ledger or plant ledger, as it is sometimes called.

3. Establishing Equipment Controls.

No peculiar problem is presented in establishing and maintaining equipment controls. The various equipment accounts are developed as a result of postings being made from the following sources.

*Debits from:**(1) The voucher register.*

- (a)* Covering the invoice cost of all items of equipment.
- (b)* All other capital costs incidentally involved in placing the asset in readiness for use.

(2) The general journal or journal vouchers.

- (a)* Covering any adjustments whereby the equipment account has been credited erroneously.

*Credits from:**(1) The cash receipts journal.*

- (a)* For the sale or scrap value received when a unit is sold.

(2) The general journal or journal vouchers.

- (a)* Upon disposal of a unit, for the amount of depreciation which has been charged off the particular unit, for which a corresponding amount has been accumulated in the related depreciation reserve account.

- (b)* For any amount of undepreciated cost that is not covered in full by the selling value or exchange value received, which is reflected in such an account as Loss on Sale of Capital Assets.

- (c)* For any adjustment whereby the equipment account has been charged incorrectly.

There are no special columns in any of the above-mentioned journals for equipment accounts. There is no necessity for control account columns in the journals because equipment purchases and disposals occur with relative infrequency. All transactions pertaining to equipment, therefore, are entered in the general ledger columns of the journals.

4. The Equipment Ledger.

In contrast with the simplicity in establishing the equipment controls is the detail involved in maintaining the subsidiary records. Each class of equipment, such as machinery, automobiles, office and store furniture and fixtures, horses, wagons, buildings, patterns, drawings, etc., obviously, is made up of a varying number of units. A separate ledger sheet or card should record the data pertaining to each unit. A history

of each unit from the date of its entrance into the business until it is disposed of is recorded in the equipment register.

In order that the individual units may be identified with their subsidiary record, a system of numbering may be adopted. Various methods of labeling the units of equipment are in practice in order to identify them with their book record. Metal tags may be riveted or brazed on machines; automobiles may have numbers painted thereon; furniture and fixtures may be stenciled with a number in some inconspicuous place; buildings may be identified by address or location; and patterns and drawings marked by number on metal tags.

A rather complete history of each unit in the subsidiary record would include the following information:

1. Name of general class of equipment.
2. Description of specific unit.
3. Number of unit.
4. Location.
5. Vendor's name.
6. Vendor's number.
7. Voucher number covering purchase
8. Date acquired.
9. Estimated useful life.
10. Estimated scrap value.
11. Invoice cost.
12. Freight and cartage cost.
13. Installation cost.
14. Total original cost.
15. Additional cost of improvements or betterments.
16. Depreciation rate per annum.
17. Annual amount of depreciation.
18. Monthly amount of depreciation.
19. Accumulated depreciation in reserve account.
20. Net book value of unit.
21. Date of disposal of unit.
22. Disposition of unit.
23. Value received (trade-in or cash).
24. Repair charges.

A model form for the equipment ledger covering the above items is shown in the form on page 323.

In the illustration, it will be noted that a betterment capitalized at the beginning of the eighth year is presumed to have

Equipment Ledger					
General Ledger Account Machinery					
Description of Unit 60" Norris Noiseless Air Circulating Fan with Motor					
Location Press Room					
Vendor's Name L. & N. Machine Co.					
Date Acquired Jan. 1, 19—					
Invoice Cost \$1,490.00					
Depreciation Rate per Annum 10 %					
Date of Disposal					
Estimated Life 10 years Estimated Scrap Value \$50.00 Total Original Cost \$1,550.00 Annual Depreciation Charge \$150.00 Monthly Charge \$12.50 Value Received Voucher Purchase Number V-1007 Vendor's Serial Number XN-17431 Installation Cost \$60.00 Disposition (sale, trade or scrap)					
Date	Equipment Account Debited	Amount to Depreciate	Accumulated Depreciation in Reserve	Net Book Value	Repair Charges
					Date Nature of Repairs Amount
Jan. 1, 19—	Cost	\$1,550.00	\$ 150.00	\$1,550.00	
Dec. 31, 19—		\$1,500.00	300.00	1,400.00	
" 31, 19—			450.00	1,250.00	
" 31, 19—			600.00	1,100.00	
" 31, 19—			750.00	950.00	
" 31, 19—			900.00	800.00	
" 31, 19—			1,050.00	650.00	
Jan. 2, 19—	Betterment	150.00		500.00	
Dec. 31, 19—			1,170.00	650.00	
" 31, 19—			1,290.00	530.00	
" 31, 19—			1,410.00	410.00	
" 31, 19—			1,530.00	290.00	
" 31, 19—			1,650.00	170.00	
" 31, 19—				50.00	

increased the life of the asset by two years. This results in a change in the depreciation rate for the remaining five years from \$150 to \$120 a year.

The space provided for a record of repair charges is valuable in that it clearly shows when the cost of repairs is reaching a too high peak. Engineers recognize the fact that there is a certain point in the life of every asset when it is desirable to dispose of the unit. The cost of repair charges is a big factor in making the decision as to whether it is time to trade in or sell the unit. While the repair record is of great value theoretically, in practice it is dispensed with frequently. The reason is that the cost of gathering the information monthly is considered excessive.

5. Proving the Controlling Account.

With the use of the columns labeled "depreciation reserve" and "net book value," rapid verification with the controlling account is possible. The total of the "equipment" column of the subsidiary record should contain the same items as appear as debits in the various equipment controlling accounts in the general ledger. For example, if there were thirty units of machinery, the total of the "equipment" columns of the thirty subsidiary sheets should equal the total debit balance in the Machinery account in the general ledger.

Again, at the end of each year, the accumulated amounts in the depreciation reserve columns of the subsidiary records are readily verified with the general ledger valuation accounts, Reserve for Depreciation. The total of all the largest accumulated amounts in this particular column should be equal to the total credits in the depreciation reserve account related to the asset.

The total of the balances in the net book value columns of each subsidiary sheet may be verified also with the net book value of the particular asset appearing in the balance sheet at the end of any fiscal period.

By these proofs, the subsidiary records are verified with the controlling accounts periodically. Any discrepancy between the two records is invariably due to an item of depreciation misstated or omitted in the subsidiary record, or to some erroneous mathematical computation in the record.

The amount of repairs has no relation to the proof of the control.

6. Collecting Data for Statement Preparation.

When subsidiary equipment records are maintained, they furnish accurate information pertaining to the depreciation charges. In a going concern where the financial statements are prepared only once a year, the individual records reveal the annual depreciation charge.

Executives and managers always are eager to know the result of the business of each month. It is not deemed expedient to record the monthly depreciation charge every month in the equipment record. The monthly depreciation charge is computed and entered on the subsidiary record in addition to the annual charge. Each month an adjusting journal entry is prepared, using as the amount the total of the monthly depreciation charges on all units as determined from the information shown in the work sheet (Form 69). The entry is as follows:

General Journal

General Ledger		Jan. 31, 19—	General Ledger	
\$117	50	Depreciation on Machinery Reserve for Depreciation on Machinery To charge the cost of manufacturing with depreciation applicable to January	\$117	50

In collecting monthly depreciation amounts for statement purposes and adjusting entries, a special work sheet is usually employed. The work sheet, an illustration of which is shown below, collects the monthly depreciation amounts for all units of a separate group of fixed assets. A recapitulation of this work sheet at the end of the fiscal year is used to verify the annual depreciation charge recorded in the depreciation reserve column of the equipment record. The monthly total on the horizontal line is the amount for which the monthly adjusting journal entry is made. The total amount in each

vertical column should agree with the annual amount of depreciation chargeable on the specific unit as specified on the individual equipment ledger sheet. The total amount of depreciation appearing in the column headed, "total monthly charge," at the end of the year, \$1,420, should agree with the total credits made to the Reserve for Depreciation on Machinery account as a result of posting the monthly adjusting entries.

FORM 69
Work Sheet

Monthly Depreciation Charges on Machinery Units										
Date	#M-1	#M-2	#M-3	#M-4	#M-5					Total Monthly Charge
19—										
Jan.	\$ 12 50	\$ 50 00	\$ 25 00	\$ 30 00						\$ 117 50
Feb.	12 50	50 00	25 00	30 00						117 50
Mar.	12 50	50 00	25 00	30 00						117 50
Apr.	12 50	50 00	25 00	30 00						117 50
May	12 50	50 00	25 00	30 00						117 50
June	12 50	50 00	25 00	30 00						117 50
July	12 50	55 00	25 00	30 00						122 50
Aug.	12 50	55 00	25 00	30 00						122 50
Sept.	12 50	55 00		30 00	\$20 00					117 50
Oct.	12 50	55 00		30 00	20 00					117 50
Nov.	12 50	55 00		30 00	20 00					117 50
Dec.	12 50	55 00		30 00	20 00					117 50
	\$150 00	\$630 00	\$200 00	\$360 00	\$80 00					\$1,420 00

Questions

1. Under what conditions is it necessary to have equipment controlling accounts?
2. State some of the factors which make it imperative to have a subsidiary record for equipment.
3. In what manner are equipment controls established?
4. What are the different items of information which should be shown in an equipment ledger or record?
5. Of what value is the information pertaining to repairs in the equipment subsidiary record?
6. How are the equipment controlling accounts proved?
7. If the equipment controlling account balance does not agree with the subsidiary record, what steps must be taken to bring the two amounts into agreement?
8. State how it is possible to make use of a Reserve for Depreciation controlling account.

CHAPTER XXII

THE HANDLING OF PAYROLLS

1. The Importance of the Payroll.

The preparation of the payroll involves the handling of many details. Each day a record of the time worked by each employee must be verified, analyzed, and compiled in summary form. The verification is for the purpose of preventing errors in payment to employees. The analyses serve as a basis for making the proper cost distributions for labor. The compilation of daily wage tickets forms the basis for building the final payroll covering a definite pay period. The preparation of the payroll, while an internal operation, is just as important as handling the detail in connection with customers' accounts, and the preparation and payment of vouchers. Through the payroll you are dealing directly with your workers on a most vital subject, namely, their daily bread, and payroll preparation, therefore, demands the utmost care.

The importance of the payroll may be seen in the following statements, each of which is described in further detail.

a. Necessitates accuracy, rapidity, and safety in getting wages to the worker.

b. Constitutes a part of the internal check on the cash distributed to the employees.

c. Provides a basis from which a distribution of labor costs may be made to the various expense accounts.

A. *Getting the Wages to the Worker.*

Keeping the employees satisfied is an important principle of sound management. Nothing makes an employee more dissatisfied than to have his check or pay envelope short of the amount due him. Every verification possible should be applied to the calculation of the amount due the employee. The verifications of the amount due each employee are ascertained from the time clock card, time slip, time keeper, payroll clerk, and disbursing officer. The part each plays leading to

the final payroll is described in detail in later sections of this chapter.

Closely following the importance of accuracy is the need of getting the employee's pay to him as rapidly as possible. The rapidity with which the employees are paid depends in a large measure upon the nature of the pay plan in the plant. If straight day work or an hour wage is the only basis for computing the payroll, then little time is required to figure the amount that is due each employee. The existence of piece work and bonus systems increases the amount of clerical labor required to complete the payroll. Payment of wages to plant employees should be made not more than two weeks after the end of the pay period.

The third important principle of getting the wages to the worker is the factor of safety. Many concerns still adhere to the old practice of paying by cash, which has both advantages and disadvantages. A safer method of wage payment avails itself of the pay-check method which likewise has its merits and drawbacks.

Wage payment by cash presents two big problems, as follows:

1. Analysis of the amount due *each* employee in order that the *exact* amount of currency and coins may be ordered from the bank so that the pay envelopes may be correctly filled. This is technically known as "taking off change," and quite often requires a considerable amount of time and trouble.

2. Safeguarding the cash transferred from the bank to the plant, and the payment to the employees. The cost of protection purchased in the form of police, guards, armored automobiles, tear gas, and other ordnance is an expense to be compared with the cost of pay-check preparation.

Wage payment by check involves the following problems:

1. The cost of writing, signing, auditing, and reconciling the pay checks, which amounts to considerable work in the course of a year.

2. Arrangements must be made in many cases with some bank for cashing the employees' checks.

Many other arguments for and against both methods are to be considered when a company is newly organizing or plans to change over from one method to another.

B. The Importance of an Internal Check on the Payroll.

There must be an adequate double check on the amount paid each employee to prevent the possibility of collusion between the employees and payroll clerks, whereby the company would be defrauded. The paymaster of the plant is always a trusted employee with a record of many years of service. As an extra safeguard he is usually heavily bonded. When this officer is not engaged in paying the employees, his duties usually consist of checking and verifying the amounts due individuals, in addition to making the payroll distribution. Too much emphasis cannot be laid on the importance of having the different steps involved in the preparation of the payroll in the hands of different persons.

A rather adequate internal check on the amount paid to each workman may be affected by having in operation the following plan.

1. Each workman is required to punch a time-clock card, showing the hour when entering and leaving the plant. Watchmen prevent workmen from punching more than one time card.

2. The foreman of indirect labor is required to turn in time slips showing the nature of the operation and the number of hours worked by each employee of this classification.

3. Each workman classed as a direct laborer is required to prepare either a production card or a time slip showing the number of hours worked on each job.

4. A timekeeper is employed whose duty it is to make a trip through the plant at least twice a day to note in a time book the presence of each workman at his job in the plant.

From the individual time-clock cards is calculated the total number of hours worked in each pay period. This should be the work of a clerk who has nothing else to do with the payroll preparation. At the end of each pay period a report should be made to the auditor showing the number of hours in the plant by each workman. The daily presence of each workman as shown on his time card is verified by the timekeeper's book. An additional verification on the number of hours worked by each employee is determined by checking the individual's time slip or wage ticket with the daily time-clock card in the auditor's office. Other clerks who have had nothing to do with the verification of time-clock cards and the time slips

FORM 70.—TIME CLOCK CARD¹

Form No. 1163

PAY ENDING

April 15

19

No.
NAME

61

J. K. Hill

	MORNING IN	NOON OUT	NOON IN	NIGHT OUT	EXTRA IN	EXTRA OUT	
1	644	1 1202	1 1255	1 504			9
2	658	2 1201	2 1257	2 502			9
3	726	3 1159	3 1246	3 503	3 600	3 900	11 $\frac{1}{4}$
4	651	4 1200	4 1254			4 602	10
5	700	5 1203	5 1259	5 503			9
7	702	7 1204	7 1258	7 505			8 $\frac{3}{4}$
8	801	8 1210	8 101	8 430			7 $\frac{1}{4}$
9	650	9 1158	9 1253	9 504			8 $\frac{3}{4}$
10	644	10 1203	10 1252	10 515			9
11	651	11 1204	11 1255	11 503	11 600	11 801	11
12	647	12 1204	12 1258	12 459	12 602	12 1000	12 $\frac{3}{4}$
13	728	13 1130					4
14	658	14 1204	14 100	14 503			9
15	700	15 1205	15 1259	15 506			9
TOTAL TIME 127 $\frac{3}{4}$							
RATE .88							
TOTAL WAGES							\$112.42

¹ By courtesy of the International Business Machines Corporation, New York City.

compute the amount due each employee. An effective check is thus provided on the amount due each worker. In some plants the treasurer's office is responsible for the actual cash payment after the payroll has been prepared, a representative

of the treasurer's office and the paymaster jointly paying the employees.

It is the function of the shop employees to place on the time slips and wage tickets daily the number of hours worked and the time devoted to each job and operation. It is the function of the payroll clerks to write the occupation or operation rate on the time slips or wage tickets and make the extensions showing the amount earned.

C. The Labor Distribution.

Analyses of the wage tickets and time slips furnish the figures for making a distribution of labor costs. The labor distribution may be prepared daily or monthly. Labor cost distribution means the analysis of the amount of wages paid to the different departmental job and expense accounts of the plant. The number of wage distribution accounts is determined by the nature of the product or products manufactured, the size of the plant, and the different needs of the manage-

FORM 71

Indirect Labor—Time Slip			
Employee's Name <u>John H. Mellor</u>		No. <u>77</u>	
Department <u>Labor Gang</u>		Section <u> </u>	Date <u>Jan. 3, 19</u>
Operation	Hours	Rate	Amount
Loading scrap.....	9	\$0.50	\$4.50
<u>Chas. Winks</u> Foreman			

ment. The labor distribution slip, as illustrated in Form 75, provides for 33 different wage distribution accounts.

As the workmen's time slips or wage tickets are received in the office each day, the amount earned is calculated and entered on the payroll sheet, after the verification previously mentioned has been completed. Time slips are usually prepared by the indirect laborer foremen, while the term "wage tickets" generally refers to a record of work done by the direct laborers.

The daily wage tickets, as filled in by the direct laborer, show the nature of the work which he has done. The name or number of the wage account affected is then placed on the wage ticket by a clerk. All of the wage tickets are sorted daily in accordance with the name and number of the wage account affected. The total daily amount of wages applicable to each wage account is thereby computed. At the end of each pay period or at the end of each month, a journal entry is made whereby each wage expense account is charged for the amount of wages earned within the period. In event expense controlling accounts are used in conjunction with an operating ledger, the distribution of labor is made from the payroll voucher as described in Sec. 7 of this chapter. This eliminates a general journal entry for the labor distribution.

2. Other Points Involved in Payroll Preparation.

The steps involved in the preparation of the payroll have been described in some detail. Other points pertaining to the payroll which need description in order to understand the accounting for it are as follows.

a. Calculating wages due under various wage payment plans.

b. Frequency of payment.

c. Deductions from employees' wages (assignments).

d. Payment to employees.

Each of these features is described in the following sections:

3. Wage Payment Plans.

Different plans of determining wages are in effect in different manufacturing establishments. Some small concerns, producing a simple product, may have a straight day wage, paid to all employees.

Other similar businesses may pay different rates per hour in accordance with the nature of the occupation. Plants pro-

ducing a varied line of commodities, where assembly is necessary, may pay their direct laborers on the piece-work plan, and in addition pay hourly wages to the indirect laborers. Direct laborers may be paid piece-work rates on production, and hourly rates while production is at a standstill due to machine breakdown, lack of orders, or material shortage. These off-standard situations are problems that must be carefully accounted for, if a cost system is to be effective. Many modern plants have in operation some type of bonus for exceeding standard production. In a steel or glass plant, wages may be computed on a daily tonnage basis, with additional bonus money at the end of the month or quarter for exceeding the standard tonnage production. Indirect laborers may also work on the incentive plan, provided their work is readily measurable. Where the work is difficult of accurate measurement, they often are paid a bonus based upon the average earned by the direct labor group. Plant foremen and superintendents are usually paid on a monthly basis.

The above descriptive wage payment plans have been enumerated to give an idea as to the work which is required to compute the daily pay due each workman. Each wage ticket of each workman must provide for the amounts earned under the different plans in operation within a given plant, because the individual wage tickets form the basis for the payroll preparation.

4. Frequency of Wage Payment.

The customary pay period is either twice a month or every two weeks. This means that payrolls must be prepared either 24 times a year on the first basis, or 26 times a year on the second basis. Administrative officers, clerks, and salesmen are usually paid once a month, and a separate payroll is prepared for them.

There is an advantage, from an accounting viewpoint, in paying semimonthly rather than every two weeks. Where there are but two pay periods in the month, namely, from the first to the fifteenth, inclusive, and from the sixteenth to the thirtieth or thirty-first, inclusive, the entries for the accrued payroll are taken from the completed payroll at the end of the month. This is a quite important factor because it eliminates the necessity for a separate accrual computation

for several odd days at the end of the month under the two-week plan.

Where the pay period is semimonthly, closing with the fifteenth and the end of the month, the actual pay day is usually about five days thereafter or on the twentieth, and fifth of the following month. The intervening time permits preparation of the payroll.

5. Payroll Assignments.

Most business concerns have the problem of payroll assignments and make deductions from their employees' wages with the preparation of every payroll. These assignments are for various purposes. Some of the most common assignments are made for:

1. Cash advances of wages made to employees.
2. Company store purchases or payments authorized to be made to some creditor of the employee.
3. Garnishment or other liens against the employee's wages.
4. Contributory group insurance premiums.
5. Capital stock purchase payments.
6. Relief association dues.

A separate column should be provided in the payroll sheet for each separate type of deduction. The total payroll is prepared showing the amount due each employee for the total time worked. Any deductions are subtracted from the figure representing the wages for services rendered by each employee, and the balance is the amount which the employee is paid.

6. Payment to Employees.

After the payroll sheet is completed at the end of each pay period, in event payment is made by cash, an identification slip is made out in duplicate for each workman. Each copy shows the name of the workman, his number, and the amount of wages due. The original copy goes to the workman who presents it to the paymaster on pay day after he has affixed his signature thereto. In this manner the slips serve as a receipt for the money paid. An adding machine tape is run from the duplicates, the total of which represents the amount to be drawn if payment is made in cash. If payment is made by check, the slips serve as a basis for writing the checks.

The necessity, where payment is made by cash, for making an analysis of the currency and coin denominations needed to fill each employee's envelope has already been mentioned. For example, if the pay due an employee amounts to \$57.93, it would require the following pieces of money:

2	\$20 bills.....	\$40.00
1	\$10 bill.....	10.00
1	\$ 5 bill.....	5.00
2	\$ 1 bills.....	2.00
1	half dollar.....	0.50
1	quarter.....	0.25
1	dime.....	0.10
1	nickel.....	0.05
3	pennies.....	0.03
	Total.....	<u>\$57.93</u>

The amount due each employee on the payroll must be likewise analyzed. Upon completion of the task, the bank is requested to prepare the various denominations, the total of which equals the voucher check drawn for the entire payroll. When the check is exchanged for the payroll cash, the pay envelopes are filled and made ready for pay day. This making of change for each envelope must be carefully done or endless trouble is in store in finding where the erroneous filling of envelopes has taken place.

7. Accounting for the Payroll.

The chief details pertaining to the safeguarding and preparation of the payroll have been described in the preceding sections. It has been described how the time slips and direct labor wage tickets form the basis for the preparation of the payroll sheet, showing the amount due each employee. From these same forms, the distribution of labor costs is also obtained.

As the wages for each employee are computed from the time cards each day, a record is made on both the payroll sheet and the labor distribution record. There are many forms of the payroll sheet and labor distribution record. Two of these, Forms 73 and 75, are suggestive of types that may be followed for specific installation.

FORM 73

Pay ending Dec. 31, 19—			Payroll								
No.	Name	Rate	Dec. 16	Dec. 31	Hours	Day Work Value	Piece Work	Total	Deductions		Amount Due
									Insur- ance	Other	
1	Joe Schwartz	D.W. \$0.625 P.W.	\$ 5.00	\$ 5.94	106	\$ 66.25		\$ 66.25	\$ 1.00		\$ 65.25
2	George Smith	D.W. 0.70 P.W.	8.47	3.50 2.89	27	18.90	\$ 64.10	83.00	1.00		82.00
30	Tony Soho	D.W. P.W.	7.17	8.03			57.95	57.95	1.00		56.95
		D.W. P.W.	\$ 27.50 92.75	\$ 29.75 100.15		\$320.00	\$1,470.25	\$1,790.25	\$30.00		\$1,760.25
			\$120.25	\$129.90							

FORM 75

FRY EQUIPMENT CO.

ROCHESTER, PA.

DAILY

LABOR DISTRIBUTION

Date December 16, 19—

Amount		Acct.	
\$ 15 00	311	Mach. Dept.	
35 40	312	Assem. "	
18 60	313	Tank "	
10 10	314	B. F. "	
8 75	315	L. G. "	
*\$ 87 85		DIRECT LABOR	
	325	Def. Mat. & Wk.	
	330	Gen. Labor	
	332	Inspection	
	337	Rep. to Eqpt.	
		MACHINE	
	423	Bonus	
\$ 2 00	425	Def. Mat. & Wk.	
	430	Gen. Labor	
	432	Inspection	
	437	Rep. to Eqpt.	
*\$ 2 00		ASSEMBLY	
	525	Def. Mat. & Wk.	
	530	Gen. Labor	
	532	Inspection	
\$ 2 50	537	Rep. to Eqpt.	
*\$ 2 50		TANK	
	628	Exper.	
	630	Gen. Labor	
		BATTERY FILLER	
		LIQUID GAUGE	
	182	Service	
	204	Shipping	
	277	Misc. Deduc.	
\$ 5 00	821	Truck Driver	
	825	Reclaim	
	827	Eng. Exp.	
4 50	830	Police	
2 40	830	Storeroom	
	830	Laborers	
	830	Maintenance	
6 00	832	Inspection	
	840	Welfare	
	845	Power House	
*\$ 17 90		MISCELLANEOUS	
* 10 00		INDIRECT LABOR	
\$120 25		TOTAL	

Note that the total pay for Dec. 16 amounts to \$120.25. This figure agrees with the labor distribution slip for the same date as shown in Form 73. The daily totals on both the payroll and the labor distribution forms must always agree, since they are prepared from the same source—the wage tickets.

When the payroll sheet is complete at the end of the pay period, a voucher is drawn for the net amount to meet the payroll, \$1,760.25. For the illustration on page 337 the entry in the voucher register would be as shown on page 338.

The daily labor distribution summaries are recapitulated at the end of each pay period in order to show the amount to be charged to each wage account. The final figures for the labor distribution at the end of the pay period are attached to the voucher, from which they are recorded in the voucher distribution summary sheet. In this manner each wage account is charged with the proper amount as it ultimately appears in the operating ledger.

Questions

1. What are the problems involved in getting wages to the worker?
2. Describe a system of internal check which should be in operation in connection with a payroll.
3. What is the function of the following forms
 - a. Time slip?
 - b. Wage ticket?
 - c. Time-clock card?
 - d. Payroll sheet?
 - e. Labor distribution?
4. What is the problem involved in connection with fixing the pay periods?
5. Name several different ways in which wages are determined.
6. What are some of the reasons for making a deduction from employees' wages?
7. What is meant by "taking off change," and what are some of the problems involved?
8. Under what classification of accounts would you place the payroll account?

CHAPTER XXIII

CODE CLASSIFICATIONS

1. The Purpose of Codes for Accounts.

To obtain an orderly arrangement and proper organization of the accounts of an enterprise, a classification code must be established.

This code of accounts means the use of symbolic numbers and letters to indicate both the different kinds of accounts, and the different departments and operations of the concern. The code also indicates the plan of organization of the concern with the many relationships that exist between departments and operations; it covers as well the different classifications of accounts which have been analyzed in Chap. II.

As an illustration, take a charge number for one account from the code of accounts of a large steel concern and see how much information is packed into this code number. An amount of \$84.50 is charged to 51.105. Analyzed, this shows: First, that the charge goes to a blast furnace because the whole number 50 always indicates blast furnaces. Second, the number further localizes the charge to blast furnace No. 1, as the unit figure indicates which specific blast furnace is meant. Third, you know at a glance that it is a *wages* item as all items under 0.1 (first decimal place) are wage items. Fourth, you know that it is *wages of ash wheelers*, as the second and third decimal places are used for the different kinds of labor and it so happens that 05 is the code number for ash wheelers.

Thus, in one number you see at a glance an ash wheeling wages charge made to blast furnace No 1. Should this same kind of work be performed at No. 8 open hearth, instead of No. 1 blast furnace the charge would read 68.105 as 60. is open-hearth department and 8 the specific open hearth.

Let us list the more important advantages that are inherent in a code classification.

1. It indicates all the accounts according to a functional classification and also carries a symbol for each department.

2. A proper code is elastic and can be expanded or contracted with ease; thus it allows for any changes in size and nature of the plant.

3. A code is a great time saver because it eases the handling of accounting data and the manifold classifications such data necessitate.

4. It establishes a scientific and simple system for filing.

5. It is a necessary part of electric tabulation wherein accounting data are punched into a tabulating card (electric tabulation of costs is covered in Vol. II).

6. It makes the learning of both the organization plan of the concern and its accounting system quite easy, in that it presents a logical relationship of all departments and all accounts.

7. Many concerns are now members of a trade association or the like. Uniform accounts of all concerns in the association are now established by the more important trade groups. A like code of accounts is the method of getting uniformity.

8. When the matter of budget making is taken up in Vol. II, it will be seen that both budget estimates and budget allowances are set up under the same code classification that will record the expenditures, when they are made. This feature of the code makes budget operations both clear and easy.

9. A code furnishes a simple and understandable means for routing and scheduling materials, men, etc., throughout the shop, and also furnishes the means of controlling materials in stock as well as in process.

10. A code of accounts greatly assists in the development of standardization because the workings of a good code point out a situation found in many plants of having many similar articles used for exactly similar purposes. Thus, as we work to simplify the code, we reduce the number of items, which means definite steps toward standardization.

2. Types of Codes.

In the developing of a code it is important to adhere to several important principles to assure success. The following points are pertinent:

1. The code must be kept simple, so that it can be readily understood. A complex code is always a confusing one.

CHART 9.—MNEMONIC CODE SYSTEM

Major groups	Key letter	Subdivisions	Key numbers	Illustration account number
Assets.....	<i>A</i>	Current	A1 to A19	Cash
		Fixed	A20 to A29	Land
		Deferred Charges	A40 to A49	Prepaid Insurance
Liabilities.....	<i>L</i>	Current	L50 to L69	Notes Payable
		Long Term	L70 to L79	Mortgage Payable
		Deferred Credits	L80 to L89	Prepaid Rentals Received
Ownership.....	<i>C</i>	Capital or Capital Stock	C90 to C99	Common Capital Stock
		Surplus	C100 to C109	Earned Surplus
		Surplus Reserves	C110 to C119	Reserve for Betterments
Revenue or Income.....	<i>R</i>	Operating Income	R120 to R129	Sales
		Incidental	R130 to R139	Commissions Earned
Expenses.....	<i>M</i>	Manufacturing	M140 to M169	Direct Labor
	<i>T</i>	Trading	T170 to T199	Salesmen's Salaries
	<i>G</i>	General and Administrative	G200 to G219	Officers' Salaries
	<i>E</i>	Incidental	E220 to E229	Interest and Discount Paid
Valuation Reserves.....	<i>VC</i>	Pertaining to Current Assets	VC230 to VC239	Reserve for Doubtful Accounts
	<i>VF</i>	Pertaining to Fixed Assets	VF240 to VF249	Reserve for Depreciation
				VF240

2. It must be one that is easy to remember. A quickly memorized code means less errors in its usage.

3. It must be elastic so that expansion is easy.

4. It must coincide with the working divisions of a plant, thus assuring a close contact between accounts and the shop.

With these four fundamental points kept in mind, let us scan a few of the different types of codes.

3. The Mnemonic System.

This system of coding uses letters in the account numbering that associate with the memory the name of the account: *A* for Assets; *L* for Liabilities; *C* for Capital, etc.

4. Numerical System—Whole Numbers Only.

This system makes use of whole numbers only in the scheme of numbering the accounts. The general plan is to have a key number for each of the major groups of accounts. A subkey number is adopted for each of the subdivisions under each major group. And under each subdivision the individual accounts are numbered.

The plan is illustrated as follows:

CHART 10.—CODE SYSTEM WITH WHOLE NUMBERS ONLY

Major groups	Key number	Subdivision	Key number	Account number
Assets.....	1	Current	10	Cash 100
		Fixed	12	Land 120
		Deferred Charges	14	Prepaid Insurance 140
Liabilities.....	2	Current	20	Notes Payable 200
		Long Term	22	Mortgage Payable 220
		Deferred Credits	24	Prepaid Rentals 240
Ownership.....	3	Capital or Capital Stock	30	Common Capital Stock 300
		Surplus	32	Earned Surplus 320
		Surplus Reserves	34	Reserve for Betterments 340
Income or Revenue...	4	Operating Income	40	Sales 400
		Incidental Income	42	Commission Earned 420
		Manufacturing	50 to 53	Raw Material Purchases 500
Expense.....	5	Trading	54 and 55	Advertising 540
		General and Administrative	56 and 57	Officers' Salaries 560
		Incidental	58	Interest and Discount Paid 580
Valuation Reserves...	6	Pertaining to Current Assets	60	Reserve for Doubtful Accounts 600
		Pertaining to Fixed Assets	62	Reserve for Depreciation on Buildings 620

While the above system provides for expansion, it is not infinite in its scope. It is a very simple system to master through becoming familiar with the key and subkey numbers. For example, the number 22 amplifies the fact that the liability account is a long-term liability. The number 220 further defines and limits an account under the long term liability group, the name of which must become associated with that particular number.

5. Numerical System—Fractional Numbers.

A system which provides for the use of decimal numbers in the coding system may be expanded indefinitely. Whole numbers are for signifying the major groups and subdivisions, and decimals are used to designate the individual accounts.

This plan works in accordance with the following illustration:

CHART 11.—FRACTIONAL NUMBER CODE SYSTEM

Major groups	Key number	Subdivisions	Key number	Account number
Assets.....	1	Current	10	Cash 10.1
				Petty Cash 10.2
				Notes Receivable 10.3
		Fixed	100	Land 100.1
				Buildings 100.2
				Prepaid Insurance 1000.1
Liabilities.....	2	Deferred Charges	1000	
		Current	20	Notes Payable 20.1
		Fixed	200	Mortgage Payable 200.1
		Deferred Credits	2000	Prepaid Rentals
Ownership.....	3			Received 2000.1
		Capital or Capital Stock	30	Common Capital Stock 30.1
		Surplus	300	Earned Surplus 300.1
		Surplus Reserves	3000	Reserve for Betterments 3000.1
Income or Revenue...	4	Operating	40	Sales 40.1
		Incidental	400	Commissions Earned 400.1
Expense.....	5	Manufacturing	5	Raw Material Purchases 5.1
		Trading	50	Advertising 50.1
		General and Administrative	500	Officers' Salaries 500.1
		Incidental	5000	Interest and Discount Paid 5000.1
Valuation Reserves...	6	Pertaining to Current Assets	60	Reserve for Doubtful Account 60.1
		Pertaining to Fixed Assets	600	Reserve for Buildings 600.1

From a perusal of the above plan it may be seen that this system permits of indefinite extension, since the individual accounts are represented by decimals. For example, if there

CHART 12.—CODE SYSTEM FOR CONTROLLING ACCOUNTS AND DEPARTMENTS

	General Ledger Control Number	Plant Ledger Control Key Number	Individual Item, Operation, or Account Number	
<i>Manufacturing Cost:</i>				
<i>Raw Materials:</i>				
Direct Materials.....	1	1	10000 to 19999	Provides for 10,000 items of direct materials shown in the stores ledgers.
Indirect Materials.....			310000 to 319999	Provides for 10,000 items of indirect materials shown in the stores ledgers.
Raw Material Inventory.....				
<i>Labor:</i>	100	100	200 to 299	Provides for 100 indirect labor occupations.
Indirect Labor.....		2	2100 to 2999	Provides for 1,000 direct labor operations.
Direct Labor.....				
<i>Overhead Expense:</i>		3		
Indirect Materials.....		Subkey Number 31	3100 to 3199	Provides for 100 indirect materials accounts as illustrated in column 6, page 348.
Indirect Labor.....		32	3200 to 3299	Provides for 100 indirect labor accounts as illustrated in column 7, page 348.
Repairs.....		33	3300 to 3399	Provides for 100 repairs accounts as illustrated in column 8, page 348.
Light, Heat and Power.....		34	3400 to 3499	Provides for 100 accounts recording the expenses of heat, light and power as illustrated in column 9, page 348.
Insurance.....		35	3500 to 3599	Provides for 100 insurance accounts as illustrated in column 10, page 348.
Taxes.....		36	3600 to 3699	Provides for 100 accounts for taxes as illustrated in column 11, page 348.
Depreciation.....		37	3700 to 3799	Provides for 100 depreciation accounts as illustrated in column 12, page 348.
Miscellaneous Expense.....		38	3800 to 3899	Provides for 100 accounts for miscellaneous expense items as illustrated in column 13, page 348.
			3910 to 3919	

CHART 12.—CODE SYSTEM FOR CONTROLLING ACCOUNTS AND DEPARTMENTS (Continued)

Cost Element Key Number												
1	2	3	4	5	6	7	8	9	10	11	12	13
General Ledger Control Key Number	Plant Ledger Control Key Number	Direct Materials or Service Dept.	Direct Labor or Service Dept.	Manufacturing Overhead	Indirect Materials	Indirect Labor	Repairs	Light Heat and Power	Insurance	Taxes	Depreciation	Miscellaneous
		/1	/2	/3	/31	/32	/33	/34	/35	/36	/37	/38
<i>Productive Departments:</i>												
70	71	71/1	71/2	71/3	71/31	71/32	71/33	71/34	71/35	71/36	71/37	71/38
	72	72/1	72/2	72/3	72/31	72/32	72/33	72/34	72/35	72/36	72/37	72/38
	73	73/1	73/2	73/3	73/31	73/32	73/33	73/34	73/35	73/36	73/37	73/38
	74	74/1	74/2	74/3	74/31	74/32	74/33	74/34	74/35	74/36	74/37	74/38
<i>Service Departments:</i>												
<i>Power:</i>												
08	081	081/1*	081/2*	081/3	081/31	081/32	081/33	081/34	081/35	081/36	081/37	081/38
	082	082/1*	082/2*	082/3	082/31	082/32	082/33	082/34	082/35	082/36	082/37	082/38
	083	083/1*	083/2*	083/3	083/31	083/32	083/33	083/34	083/35	083/36	083/37	083/38
<i>Experimental and Development:</i>												
09	091	091/1*	091/2*	091/3	091/31	091/32	091/33	091/34	091/35	091/36	091/37	091/38
	092	092/1*	092/2*	092/3	092/31	092/32	092/33	092/34	092/35	092/36	092/37	092/38
	093	093/1*	093/2*	093/3	093/31	093/32	093/33	093/34	093/35	093/36	093/37	093/38
	094	094/1*	094/2*	094/3	094/31	094/32	094/33	094/34	094/35	094/36	094/37	094/38
<i>Personnel:</i>												
01	011	011/1*	011/2*	011/3	011/31	011/32	011/33	011/34	011/35	011/36	011/37	011/38
	012	012/1*	012/2*	012/3	012/31	012/32	012/33	012/34	012/35	012/36	012/37	012/38
	013	013/1*	013/2*	013/3	013/31	013/32	013/33	013/34	013/35	013/36	013/37	013/38
	014	014/1*	014/2*	014/3	014/31	014/32	014/33	014/34	014/35	014/36	014/37	014/38
<i>Stores:</i>												
02	021	021/1*	021/2*	021/3	021/31	021/32	021/33	021/34	021/35	021/36	021/37	021/38
	022	022/1*	022/2*	022/3	022/31	022/32	022/33	022/34	022/35	022/36	022/37	022/38
	023	023/1*	023/2*	023/3	023/31	023/32	023/33	023/34	023/35	023/36	023/37	023/38
<i>Shop Maintenance:</i>												
03	031	031/1*	031/2*	031/3	031/31	031/32	031/33	031/34	031/35	031/36	031/37	031/38
	032	032/1*	032/2*	032/3	032/31	032/32	032/33	032/34	032/35	032/36	032/37	032/38
	033	033/1*	033/2*	033/3	033/31	033/32	033/33	033/34	033/35	033/36	033/37	033/38
	034	034/1*	034/2*	034/3	034/31	034/32	034/33	034/34	034/35	034/36	034/37	034/38

* Service department materials and service department labor must be differentiated from direct materials and direct labor for productive departments.

were 275 manufacturing expense accounts, they could be designated by the numbers 5.1, 5.2, etc., to 5.275. This system of coding the accounts may be applied to a very large account classification with each code number remaining relatively small in the number of figures used.

No provision was made in this system for adapting the code to a group of expense controlling accounts. It would be possible to do so by designating a block of decimals to a particular control group. For example, a stores controlling account could be designated by the numbers .1000 to .1999. For an overhead controlling account the decimal numbers .2000 to .2999 could be used. This scheme is not as feasible as a code system designed especially for application to controlling accounts.

6. A Code System for Controlling Accounts.

Many manufacturing establishments as well as contracting concerns, which have cost systems in operation, departmentalize their business. When this is expedient, the accounting system must follow the organization plan. The accounts required to record the costs within the departments may be readily associated together. This association of code with departmental division is of great importance. Through this tie-in, the code makes it possible to set up fixed controls under specific plant officials, be it a minor executive, such as a foreman, or major executive, such as a general manager of a large division.

In a large manufacturing plant there exist what is known as Service Departments. These are departments where no production takes place, but indirect departments whose duty is to furnish special types of service involved in production. Some illustrations of indirect departments are the stores, personnel, clerical, power, and research departments. The expense accounts for these departments are usually in a subsidiary ledger controlled by a general ledger account. Again, this type of account may be coded so that the account number may be identified readily with the department and quite often with the individual at the head of the department.

Controlling accounts for raw materials, work in process, labor, overhead expenses, or any other type of expense may be given an identification code number.

An illustration of a system of accounts involving departments both productive and service, inventories and expenses, is given in Chart 12. The coding system is designed to differentiate actual operating costs from departmental processes. At the same time, cost elements charged with work in process may be followed through various departments by a combination of the departments and expense codes. This system of coding is very flexible, yet carries a clear and simple identification number from the controlling account down to the many detailed subsidiary accounts.

Practical application of this system of coding is given in a plant manufacturing gears and pinions shown on pages 346, 347 and 348.

Questions

1. What is meant by a code classification?
2. What are the characteristics of a successful code system?
3. Enumerate the advantages of a code classification.
4. What is the mnemonic code system?
5. What advantages has a fractional numerical code system over a numerical system with whole numbers only?
6. Describe a code system designed for application to a plant having numerous factory control accounts, several service departments and numerous production departments.

PART IV

REVENUE ACCOUNTS

CHAPTER XXIV

THE PRINCIPLES AND OPERATION OF REVENUE ACCOUNTS

1. Revenue Accounts—A Simple Form of Cost System.

Several chapters have been devoted to expense and cost controls pertaining to manufacturing concerns. When one speaks of accounting for a manufacturing industry, cost accounting is generally brought to mind. Many small manufacturing plants, however, have no complete cost system in operation. In the place of a real cost system, production costs as well as selling and administrative costs are ascertained through the use of revenue accounts.

Revenue accounts are accounts which bear the names of special departments or divisions of the business for the purpose of ascertaining the costs and profits of the particular department or division. The use of revenue accounts is by no means the equivalent of a cost system. Cost determinations by use of revenue accounts are inadequate except for those plants which manufacture but one or a very few commodities. Even in a plant whose productive scope is narrowed to one commodity, quite often cost determinations by revenue accounts are inadequate. Finding the cost of every operation performed in the manufacture of each different product is one of the main functions of cost accounting. Costing each operation is not attempted where revenue accounts are used, which is one of the reasons why they are inadequate.

Revenue accounts, however, are a distinct stepping stone toward a real cost system. The same elements of cost are involved in the production of commodities whether or not a cost system exists. The presentation of revenue accounts in this text is the transitional step to cost accounting proper as presented in Vol. II.

2. The Nature of Revenue Accounts.

Revenue accounts are departmental *profit and loss accounts*. The revenue accounts used most frequently in a manufacturing concern are:

1. The Manufacturing account.
2. The Distribution or Selling account.
3. The Administration account.
4. The Profit and Loss account.

These accounts are used as summary accounts, at the end of the fiscal period into which the operating accounts are closed. The many detailed expense and income accounts are transferred from the general ledger and the expense ledgers to the several revenue accounts. By this procedure, the operating figures for each division or department may be known. The single profit and loss account described in Chap. XI, did not permit of such analysis. To obtain an adequate measure of control over plant operations in the absence of a cost system, it is necessary to have a knowledge of:

1. The volume of business carried on in each department.
2. The expenses incurred in each department.
3. The income applicable to each department.
4. The general expense applicable to all departments.
5. The final result of operations for the entire plant.

Revenue accounts provide for these summaries.

The revenue accounts for Manufacturing, Distribution, Administration and Profit and Loss listed at the top of this page are by no means the only such accounts in use. There may be a revenue account created for any special group of expenses or for any special activity, for which there is managerial need. Other examples of revenue accounts are as follows.

In an accounting system for a coal mine:

1. Mining account.
2. Company Store account.
3. Real Estate (company houses) account.
4. Bus Service account.

In an accounting system for a department store:

1. A separate revenue account for each department.

In an accounting system for a building contracting concern:

1. Road Construction account.
2. Automobile Maintenance account.

3. Boiler House account.
4. Derrick, Dock, and Bin Maintenance account.
5. Cement Block Manufacture account.
6. Cafeteria account.
7. Machine Shop account.

In an accounting system for a bakery:

1. Bakery account.
2. Cafeteria account.

3. The Operation of Revenue Accounts.

The procedure for the use of revenue accounts in a manufacturing concern follows.

The various expense and income items are recorded in their specific accounts in the general or expense ledgers from day to day. After a trial balance is prepared at the end of the fiscal period and the final adjusting journal entries have been posted, these accounts are ready to be closed out through the revenue accounts. The most important problem at this time is to make the distribution of the individual account balances to the proper revenue account. There is no balance in the revenue accounts prior to the time when the individual operating account balances are transferred.

The nature of some of the more common accounts the balances of which are transferred to the different revenue accounts are as follows:

FORM 76 Manufacturing

Inventory Raw Materials (at beginning of period)	Inventory Raw Material (at the close of period)
Inventory Work in Process	Inventory Work in Process
Purchases Raw Material	Purchases Returned and Allowances
Freight and Cartage in on Raw Materials	c. Purchase Discount on Raw Material
Direct Labor	Balance representing the cost of goods produced is transferred to the Distribution account
Indirect Labor	
Heat, Light, and Power	
Factory Supplies	
Insurance on Buildings and Machinery	
Compensation Insurance	
Repairs to Machinery and Tools	
Repairs to Buildings	
Depreciation on Machinery, Tools, Equipment and Buildings	
Taxes	
Rent (if buildings are not owned)	
Miscellaneous Factory Expense	
a. Containers	
b. Royalties	

FORM 77
Distribution (or Selling)

Balance transferred from Manufacturing account	Sales (Total)
Inventory Finished Goods (at beginning of period)	Inventory Finished Goods (at close of period)
d. Finished Goods Purchased	
Sales Returned and Allowances	
e. Sales Discounts	
Shipping Supplies and Expense	
Salesmen's Salaries	
Salesmen's Expenses	
Advertising	
Freight and Cartage Out	
Insurance on Delivery and Sales Equipment	
Depreciation on Delivery and Sales Equipment	
Repairs to Delivery and Sales Equipment	
Rent for Storage of Finished Goods (if buildings are not owned)	
Warehouse Expense:	
Balance representing the net profit on the sale of goods before deducting administrative expenses is transferred to the General and Administration account	

FORM 78
Administration

Officers' Salary	Balance transferred from Distribution account
Office Salaries	
f. Officers' Bonus	Balance representing the net profit from the operation of the business is transferred to the Profit and Loss account
Stationery and Office Supplies	
Telephone and Telegraph	
Insurance on Office Equipment	
Depreciation on Office Equipment	
Postage	
Legal and Professional Expenses	
Dues and Subscriptions	

FORM 79
Profit and Loss

Balance transferred from General and Administration Expense account	Miscellaneous Sales
Interest and Discount Expense	Rental Income
Partners' and Officers' Bonus	Royalty Income
Donations	Interest and Discount Earned
g. Doubtful Accounts	Bad Debts Collected
h. Interest on Mortgage:	Commissions Earned
A credit balance represents a final net profit which is transferred to Capital or Surplus accounts	Dividends Received:
	A debit balance represents a final net loss which is transferred to Capital or Surplus accounts

Any account pertaining to the cost of manufacturing should be closed through the Manufacturing account. All accounts representing the income from sales, the cost of sales, and expense incurred in making the sales should be closed through the Distribution or Selling account. All expense accounts recording the cost involved in carrying out the administrative policies from the executive heads of the business should be closed through the Administration account. The incidental expense and income, reflecting non-operating costs and revenue, should be closed directly to the Profit and Loss account.

4. Prorating Expenses.

Frequently one operating account will record the total expense which may be applicable to two or more departments. If such is the case, it is necessary at the time of closing the operating accounts to prorate the total expense among the several departments or revenue accounts in some arbitrary manner. An illustration may be made with the Telephone and Telegraph account. Ordinarily this type of expense is shown in an account under the name of General and Administrative Expense. If this expense is considered to be applicable to the manufacturing, distribution and general administrative divisions at the time of closing, the amount would be divided in some arbitrary manner to these respective divisions. The manner in which such items of expense are prorated must be determined in accordance with the nature of the expense and the existing conditions within the plant. For example, tax expense should be divided in accordance with the amount applicable to real and personal property. Taxes on real property would be applicable to land and building values. The amount of this particular tax might be allocated to the manufacturing, distribution, and administration divisions in accordance with the floor area occupied by the respective departments.

Power consumption may be allocated by meter readings; heat by cubic foot space; compensation insurance in accordance with the departmental payroll; and fire insurance on equipment and materials on the basis of the asset valuations.

5. Distribution of Expense Items.

Where operating accounts are closed through revenue accounts, controversy arises in connection with the distribu-

tion of some items. For example, the accounts, Containers, Royalties, etc., appearing in the Revenue accounts shown on pages 353 and 354, illustrate some of the controversial cases.

a. Containers may be either a manufacturing or a distribution expense or an asset, depending upon their nature. When the nature of the commodities produced requires a package, box, keg, carton, or other container to transfer it to the sales department or warehouse, the cost of the container is ordinarily considered a manufacturing expense. If the commodity requires additional packing to prepare it for shipment, the cost of such containers should be considered a distribution expense. Some types of containers are considered as assets and known as "floating equipment," as described in Chap. XIV.

b. Royalties may be considered a manufacturing or distribution expense, depending upon whether the royalty charge is based upon units produced or units sold.

c. Purchase Discount, as a credit, is a debatable item in regard to the revenue account through which it should be closed. Some accountants maintain that it should be considered only as a deduction from raw material purchase cost, hence a credit to manufacturing cost. Others hold that if the cash discount offered is above 2 per cent it is comparable to a trade discount and should be deducted from the purchase price. This is the more common practice. Other accountants maintain that the saving of cash discounts is determined only by the financial condition of the business being such that discounts can be readily taken; that it is a management problem; that it is incidental to the major operations of the business. Therefore, purchase discount represents an incidental income to be credited to Profit and Loss account. To argue the point with its many ramifications is without the scope and purpose of this text. In actual practice, purchase discount is closed through either the Profit and Loss or the Manufacturing account. A fundamental accounting principle is involved in this controversy, in regard to the unit cost of production, closing finished goods inventory valuation, and the accuracy of final net profit. These principles are described in the following Chapter under section 5.

d. *Finished Goods Purchased* may be shown in a separate trading revenue account if the purchase of finished product is a frequent practice. The item may be closed through the Distribution revenue account if relatively few units of a finished product are purchased. The purchase of finished goods is sometimes imperative if sales orders are to be filled to avoid cancellation and when the production department is behind schedule.

e. *Sales Discount* brings up the same principle as purchase discount as to its proper location in the revenue accounts. It is argued that sales discount should be debited to the Distribution account, because it represents a deduction from the operating income, sales. The proponents of this policy maintain that selling prices are boosted when goods are sold on credit terms, because of the risk involved; therefore, any discount allowed should be deducted from sales in order to reflect actual operating income. This contention seems to give way to a more logical argument. The advocates of treating sales discount as an incidental expense chargeable to profit and loss base their point of view upon the fact that managerial policy is behind the offering of the sales discount; that cash discount is offered as an incentive for prompt payment. If this viewpoint is taken, the discount should be shown as an incidental expense item by closing through the Profit and Loss account.

f. *Officers' Bonus* is sometimes considered an operating expense. Partnership agreements may provide for a bonus in lieu of salary to certain partners, the bonus being based upon output, sales volume, or other goals set. In such cases, the bonus might be closed through Manufacturing, Distribution, or Administration revenue accounts. If the bonus is voted to the partner or officer of a corporation, it is usually considered as an incidental expense item to be closed through Profit and Loss revenue account.

g. *Doubtful Accounts* as an estimated charge are sometimes considered as a selling expense and closed through the Distribution revenue account. The argument maintained for this procedure is that such expense arises from sales made, hence it should be treated as a selling expense. This argument gives way to a more convincing one. It is that the administrative policy determines whether goods are to be sold on a

cash or credit basis. If goods are sold on a credit basis and customers accounts cannot be collected, it constitutes purely a problem of management. Such a loss should be charged to the Profit and Loss account, therefore, as it is an incidental or non-operating expense.

h. Interest on Mortgage is purely a financial item which should be closed through the Profit and Loss revenue account. Sometimes the argument is maintained that the loan for which the mortgage was given is used to finance the purchase of plant equipment or to furnish working capital; therefore, the cost of using the borrowed money is a manufacturing expense. Much has been written on this subject, and "interest as a cost" is fundamentally a cost accounting problem. The result of considering interest as a manufacturing expense is, however, considered in the next chapter.

6. The Work Sheet in Connection with Revenue Accounts.

Where revenue accounts are used in closing the ledger, the work sheet necessarily must be expanded. Instead of a single profit and loss column in the work sheet, as described in Chap. VI, a separate debit and credit column is used for each revenue account. In other details the work sheet is the same. Where monthly financial statements are prepared, the revenue or departmental divisions are shown in the work sheet but no postings are made to the revenue accounts in the ledger. Monthly adjusting entries are made only to the specific expense and income accounts.

An illustration of a 14 column work sheet is shown opposite.

7. Adjusting and Closing Entries in Connection with Revenue Accounts.

Where operating accounts are closed through revenue accounts at the end of the fiscal period, all adjusting entries applicable to the income and expense accounts must be made prior to the closing of the revenue accounts. If monthly income, profit and loss statements are prepared, the adjusting entries are posted to the operating accounts monthly. But closing entries are prepared and posted only at the close of the fiscal period, usually once a year. This means that the revenue accounts in the ledger are used only at the end of the fiscal period.

FORM 80

The Penn Electric Eliminator

Work Sheet

December 31, 19—

	Trial Balance	Adjustments	Manufacturing	Distribution	Administration	Profit and Loss	Balance Sheet
Cash	\$ 5,504.28						\$ 5,504.28
Petty Cash	100.00						100.00
Accounts Receivable	17,800.74						17,800.74
Reserve for Doubtful Accounts	130.50						
Inventory Raw Materials, Jan. 1, 19—	26,782.41	(f) \$ 847.51	\$ 26,782.41				\$ 721.01
Inventory Work in Process, Jan. 1, 19—	1,403.03		1,403.03				
Inventory Finished Goods, Jan. 1, 19—	10,417.18			\$ 10,417.18			
Prepaid Insurance	1,849.74	(d) 1,496.25					353.49
Contingency Fund	4,900.00						4,900.00
Land	15,175.99						15,175.99
Buildings	32,599.16						32,599.16
Reserve for Depreciation on Buildings		(e) 977.97					977.97
Machinery	24,655.70	(f) 2,465.57					24,655.70
Reserve for Depreciation on Machinery							2,465.57
Delivery Equipment	1,879.73						1,879.73
Reserve for Depreciation on Delivery Equipment		(g) 469.93					469.93
Furniture and Fixtures	1,457.00						1,457.00
Reserve for Depreciation on Furniture and Fixtures		(h) 145.75					145.75
Goodwill	19,800.00						19,800.00
Accounts Payable	6,501.34						6,501.34
Mortgage Payable on Factory Building and Machinery	30,000.00						30,000.00
Common Capital Stock	80,000.00						80,000.00
Reserve for Betterments	5,000.00						5,000.00
Earned Surplus	10,083.34	(m) \$ 4,800.00					5,283.34
Sales	139,167.00						
Raw Material Purchases	63,010.55		63,010.55	\$ 139,167.00			
Purchases Returned and Allowances	3,469.11		\$ 3,469.11				
Direct Labor	30,871.27	(i) 662.18	31,233.43				
Indirect Labor	3,169.02	(j) 78.46	3,247.48				
Heat, Light and Power	2,709.10		2,709.10				
Miscellaneous Factory Expense	4,675.65		4,675.65				
Compensation Insurance	579.47		582.10	70.47			
Shipping, Supplies and Expense	2,480.12			2,480.12			
Salesmen Salaries and Commissions	10,420.88	(k) 416.90		10,837.78	\$ 26.90		
Advertising	757.13			757.13			
Freight, and Express Out	1,368.24			1,368.24			
Officers Salaries	5,873.00	(l) 125.00			6,000.00		
Office Salaries	1,921.70	(m) 37.50			1,959.20		
Stationery and Office Supplies	550.62				412.97		
Telephone and Telegraph	238.55				91.42		
Postage	385.45				231.27		
Commissions Earned	400.00	(n) 48.50	45.71	137.65		\$ 449.40	
Purchase Discounts	1,229.13			91.42		1,226.13	
Interest on Mortgage Payable	1,800.00			154.18		\$ 1,800.00	
Sales Discount	501.78					501.78	
	\$295,347.43	\$295,347.43					
Inventory Raw Materials, Dec. 31, 19—		(a) 17,039.61	(a) 17,039.61	17,039.61			17,039.61
Inventory Work in Process, Dec. 31, 19—		(b) 1,711.83	(b) 1,711.83	1,711.83			1,711.83
Inventory Finished Goods, Dec. 31, 19—		(c) 15,977.94	(c) 15,977.94		15,977.94		15,977.94
Insurance		(d) 1,496.25	1,197.00	149.83	149.62		
Depreciation on Buildings		(e) 977.97	733.48	122.25	122.24		
Depreciation on Machinery		(f) 2,465.57	2,465.57				
Depreciation on Delivery Equipment		(g) 469.93	469.93	43.73			
Depreciation on Furniture and Fixtures		(h) 145.75			102.02		
Payroll Accrued		(i) 1,217.06					
Doubtful Accounts		(j) 847.51					
Commissions Receivable		(k) 48.50				847.51	
Dividends		(l) 4,800.00	(m) 4,800.00				4,800.00
Dividends Payable							
		\$51,998.82	\$51,998.82				
Cost of Goods Produced			115,821.43	115,821.43			
			\$138,041.08	\$138,041.08			
Net Profit on Trading before Considering Administrative Expenses				12,103.80	\$155,144.04	\$12,103.80	
Net Profit from Operations					3,498.10	3,498.10	
Net Profit to Surplus					\$12,193.80	\$12,193.80	
						2,024.40	2,024.40
						\$5,173.69	\$5,173.69
						\$159,106.88	\$159,106.88

The adjusting and closing entries shown below are prepared from the work sheet illustrated in the preceding section.

General Journal or Journal Vouchers

19— Dec.	31	Adjusting Entries			
		a. Inventory, Raw Materials	\$17,039	61	
		b. Inventory, Work in Process	1,711	83	
		Manufacturing			\$18,751 44
		To set up inventory values at the close of the year and to adjust production cost			
		c. Inventory, Finished Goods	15,977	94	
		Distribution			15,977 94
		To set up inventory value at the close of the year and to adjust cost of sales			
		d. Insurance	1,496	25	
		Prepaid Insurance			1,496 25
		To charge expense with the amount of insurance applicable to the year			
		e. Depreciation on Buildings	977	97	
		Reserve for Depreciation on Buildings			977 97
		To charge off depreciation applicable to the year			
		f. Depreciation on Machinery	2,465	57	
		Reserve for Depreciation on Machinery			2,465 57
		To charge off depreciation applicable to the year			
		g. Depreciation on Delivery Equipment	469	93	
		Reserve for Depreciation on Delivery Equipment			469 93
		To charge off depreciation applicable to the year			
		h. Depreciation on Furniture and Fixtures	145	75	
		Reserve for Depreciation on Furniture and Fixtures			145 75
		To charge off depreciation applicable to the year			
		i. Direct Labor	562	16	
		Indirect Labor	76	40	
		Salesmen's Salaries and Commissions	416	90	
		Officers' Salaries	125	00	
		Office Salaries	37	50	
		Payroll Accrued			1,217 96
		To set up liability for the wages and salaries owed at Dec. 31, 19—			
		j. Doubtful Accounts	847	51	
		Reserve for Doubtful Accounts			847 51
		To arrange expense for the year ended Dec. 31, 19— with estimated losses from customers accounts			
		k. Commissions Receivable	48	50	
		Commissions Earned			48 50
		To record the amount of commissions earned but not received at Dec. 31, 19—			
		l. Dividends	4,800	00	
		Dividends Payable			4,800 00
		To record the liability for payment of dividends			
		m. Earned Surplus	4,800	00	
		Dividends			4,800 00
		To charge surplus with dividends declared			

Closing Entries			
Manufacturing	\$138,041 98	\$ 26,782 44	
Inventory, Raw Materials		1,463 63	
Inventory, Work in Process		63,010 55	
Purchases, Raw Materials		31,233 43	
Direct Labor		3,243 32	
Indirect Labor		2,709 10	
Heat, Light and Power		4,675 65	
Miscellaneous Factory Expense		482 10	
Compensation Insurance		45 71	
Telephone and Telegraph		1,197 00	
Insurance		733 48	
Depreciation on Buildings		2,465 57	
Depreciation on Machinery			
To close the expenses of production to Manufacturing			
Purchases Returned and Allowances	3,469 11	3,469 11	
Manufacturing			
To close to Manufacturing			
Distribution	115,821 43	115,821 43	
Manufacturing			
To transfer the cost of production to Distribution			
Distribution	27,129 71		
Inventory, Finished Goods		10,417 18	
Compensation Insurance		70 47	
Shipping Supplies and Expense		2,480 12	
Salesmen's Salaries and Commissions		10,837 78	
Advertising		787 13	
Freight and Express Out		1,368 24	
Stationery and Office Supplies		137 65	
Telephone and Telegraph		91 42	
Postage		154 18	
Insurance		149 63	
Depreciation on Buildings		122 25	
Depreciation on Delivery Equipment		469 93	
Depreciation on Furniture and Fixtures		43 73	
To close the expenses applicable to Distribution			
Sales	139,167 00	139,167 00	
Distribution			
To close sales to Distribution			
Distribution	12,193 80	12,193 80	
Administration			
To transfer the net profit from Distribution to Administration			
Administration	8,695 64		
Compensation Insurance		26 90	
Officers' Salaries		6,000 00	
Office Salaries		1,559 20	
Stationery and Office Supplies		412 97	
Telephone and Telegraph		91 42	
Postage		231 27	
Insurance		149 62	
Depreciation on Buildings		122 24	
Depreciation on Furniture and Fixtures		102 02	
To close the expenses applicable to Administration			
Administration	3,498 16	3,498 16	
Profit and Loss			
To transfer the net profit from operations to Profit and Loss			
Profit and Loss	3,149 29		
Interest on Mortgage Payable		1,800 00	
Sales Discount		501 78	
Doubtful Accounts		847 51	
To close incidental expenses applicable to Profit and Loss			
Commissions Earned	449 40		
Purchase Discounts	1,226 13	1,675 53	
Profit and Loss			
To close incidental income applicable to Profit and Loss			
Profit and Loss	2,024 40	2,024 40	
Surplus			
To transfer the net profit to surplus			

8. Revenue Accounts as Operating Controls.

Revenue accounts, although inadequate for collecting detailed costs, serve a useful purpose in that they provide a measure of control by:

- a. Showing an itemized comparison of fluctuations in expenses in the various departments.
- b. Serving as a guide to the factory administrative officers.
- c. Collecting the actual expenses departmentally from which expense budgets may be prepared.
- d. Giving a departmental analysis of maintenance, repairs, and depreciation.

9. Revenue Accounts versus a Complete Cost System.

To illustrate the inadequacy of cost finding with the use of revenue accounts, a group of entries under a cost system are shown in comparison. These entries are for the operations occurring most frequently in a manufacturing plant.

CHART 13.—COMPARISON OF JOURNAL ENTRIES UNDER REVENUE ACCOUNTS AND A COST SYSTEM FOR THE MORE COMMON OPERATIONS

Transactions	Entries under Revenue Account System	Entries under a Cost System
1. <i>Raw Material</i>		
a. Purchase	Raw Material Purchases Accounts Payable No entry	Stores Accounts Payable Work in Process Inventory Stores
b. Materials charged into production		Stores Work in Process Inventory
c. Defective materials returned to store-room	No entry	Stores Work in Process Inventory
d. Salvaged material returned to store-room	No entry	Stores Work in Process Inventory
2. <i>Labor and Payroll</i>		
a. Daily time charged to production	No entry	Work in Process Inventory Direct Labor
b. Payment of payroll	Payroll Accounts Payable	Payroll Accounts Payable
c. Labor distribution from the payroll	Direct Labor Indirect Labor Sales Department Salaries Administrative Payroll	Direct Labor Indirect Labor Sales Department Salaries Administrative Payroll
3. <i>Overhead Expense</i>		
a. When indirect expenses are incurred	Specific Factory Expenses Accounts Payable	Specific Factory Expenses Accounts Payable
b. Setting up indirect expenses to be charged into production	No entry	Overhead Control Specific Factory Expenses
c. Charging overhead into production	No entry	Work in Process Inventory Overhead Control

CHART 13.—COMPARISON OF JOURNAL ENTRIES UNDER REVENUE ACCOUNTS AND A COST SYSTEM FOR THE MORE COMMON OPERATIONS
(Continued)

Transactions	Entries under Revenue Account System	Entries under a Cost System
4. <i>Finished Goods Stage</i>		
a. Completed units transferred from factory to sales department	No entry	Finished Goods Inventory Work in Process Inventory
b. When goods are sold	Accounts Receivable Sales	Accounts Receivable Sales Cost of Sales Finished Goods Inventory
5. <i>Ascertaining Gross Profit, and Net Profit</i>		
a. To ascertain the cost of production	Manufacturing account Specific factory expenses (including inventories of raw materials and work in process at beginning of period) Inventory Raw Materials Inventory Work in Process (at close of period) Manufacturing account	(Obtained from cost cards)
b. To transfer cost of production to distribution account	Distribution account Manufacturing account	(Shown in 4a above)
c. To ascertain the gross profit on sales	Distribution account Inventory Finished Goods (at beginning of period) Sales Inventory Finished Goods (at close of period) Distribution account	Distribution account Cost of Sales Sales Distribution account
d. To ascertain the net profit on sales before considering general and administrative expenses	Distribution account Specific selling expenses	Distribution account Specific selling expenses
e. To transfer balance from Distribution account to the Administration account	Distribution account Administration account	Distribution account Administration account
f. To ascertain net profit or net loss from operations	Administration account Specific administration expenses	Administration account Specific administration expenses
g. To transfer balance from Administration account to Profit and Loss account:		
If a net loss from operations	Profit and Loss Administration account	Profit and Loss Administration account
If a net profit from operations	Administration account Profit and Loss	Administration account Profit and Loss
h. To close incidental income to profit and loss	Specific Incidental Income Profit and Loss	Specific Incidental Income Profit and Loss

CHART 13.—COMPARISON OF JOURNAL ENTRIES UNDER REVENUE ACCOUNTS AND A COST SYSTEM FOR THE MORE COMMON OPERATIONS
(Continued)

Transactions	Entries under Revenue Account System	Entries under a Cost System
i. To close incidental expense to profit and loss	Profit and Loss Specific Incidental Expenses	Profit and Loss Specific Incidental Expenses
j. To close net profit to surplus account	Profit and Loss Surplus	Profit and Loss Surplus

Questions

1. What are revenue accounts?
2. Are revenue accounts different from operating accounts?
3. Name some revenue accounts. What ones are typical of a manufacturing plant?
4. In the absence of a cost system, what important information pertaining to plant operations may be gleaned from facts assembled through revenue accounts?
5. Describe the operation of an accounting system in which revenue accounts are used.
6. Why is it necessary to prorate expenses to different departments when revenue accounts are used in closing?
7. What are some bases used in the distribution of certain expense items applicable to several departments?
8. Container cost may be considered as what type of expense in closing? Royalties? Doubtful accounts? Interest on mortgage?
9. Through what revenue account should Purchase Discount be closed? Sales Discount?
10. What is meant by the term "finished goods purchased?" How does it differ from raw materials in handling on the books and statements?
11. Describe the nature of the work sheet which is prepared when revenue accounts are used in closing the books of a manufacturing concern.
12. Should the adjusting journal entries be posted before or after the operating accounts are closed through the revenue accounts?
13. Outline the nature of the closing entries prepared in connection with revenue accounts used in a manufacturing concern.
14. How do revenue accounts provide control over plant operation in the absence of a cost system?

CHAPTER XXV

OPERATING STATEMENTS UNDER REVENUE ACCOUNTS

1. The Problem of Operating Statements.

After completion of a work sheet prepared under revenue accounts, data are available for the preparation of financial statements. A variation in the form of the statement of income, profit and loss arises in connection with the manufacturing concern.

Frequently, two separate statements are made instead of a single statement. One is known as the statement of cost of production; the other the statement of income, profit and loss. Although the same information may be shown in a single statement, it is usually deemed more expedient to prepare the two statements and for the following reasons. In the first place, each divulges information more readily and forcibly when separate statements are shown. Of greater importance, however, is the fact that each of the statements discloses a cost which is distinctly different in nature: one the cost of production; the other the cost of goods sold.

2. The Statement of the Cost of Production.

This statement, which develops the cost of production, is sometimes called the statement of the cost of manufacturing. It includes all of the elements of cost—raw material, direct labor, and overhead expenses, or those items appearing in the manufacturing column of the work sheet.

In order to describe more clearly the principles involved in this statement, a model is shown as prepared from the work sheet in the preceding chapter.

The statement of the cost of production is related to the function of manufacturing only. It shows the manufacturing cost applicable to the present period, which is useful in arriving at policies covering material, wages, and manufacturing

FORM 81

THE PENN ELECTRIC ELIMINATOR COMPANY,
STATEMENT OF THE COST OF PRODUCTION,
Jan. 1, 19— to Dec. 31, 19—

Inventory, Raw Materials, Jan. 1, 19—	\$ 26,782.44
Purchases of Raw Materials	\$63,010.55
Less: Purchases Returned and Allowances	3,469.11
Net Purchases	59,541.44
Raw Material Available for Use	\$ 86,323.88
Inventory, Raw Materials, Dec. 31, 19—	17,039.61
Cost of Raw Materials Used	\$ 69,284.27
Direct Labor	31,233.43
Overhead Expenses	
Indirect Labor	\$3,243.32
Heat, Light, and Power	2,709.10
Miscellaneous Factory Expenses	4,675.65
Compensation Insurance	482.10
Telephone and Telegraph	45.71
Insurance	1,197.00
Depreciation on Buildings	733.48
Depreciation on Machinery	2,465.57
Total Overhead Expense	15,551.93
Manufacturing Charges during Year 19—	\$116,069.63
Inventory, Work in Process, Jan. 1, 19—	1,463.63
Total Charges to Production during Year 19—	\$117,533.26
Inventory, Work in Process, Dec. 31, 19—	1,711.83
Cost of Goods Produced, Jan. 1, 19— to Dec. 31, 19—	\$115,821.43

overhead expenses. Description of the form and content of this statement is next considered.

The cost of raw materials used in production should be shown clearly in the statement. This cost is determined by adding the inventory value of raw materials at the beginning of the year to the cost of the net purchases. From this total, representing the cost of raw materials available for use, is deducted the value of the raw materials inventory at the close of the year. The resultant balance is the cost of raw materials used.

Where freight and cartage on raw materials are factors for consideration, the expense item is placed in either one of two positions in the statement. The nature of the raw materials used in the plant make it the proper procedure to add freight and cartage charges to the purchase price under certain conditions. Under other circumstances the freight and cartage charges are properly placed under the manufacturing overhead expenses.

Freight and cartage charges on specific items of raw materials are considered as a cost to be added to the invoice price,

where it is possible quickly and accurately to identify the freight, express, and cartage charges with the items of raw material purchased. This plan is always possible where the raw materials are bulky in nature, such as kegs of washers, bar and sheet steel, lumber, pipe, etc. Where a perpetual inventory is in operation, freight and cartage charges must be included in the unit prices of the raw material items affected by such charges. This is necessary in order that the Raw Materials account will receive the proper credit for materials requisitioned and charged into production. Freight and cartage expense should be added to the net amount of raw material purchases in the statement of the cost of production where the conditions described in this paragraph exist.

Many items of raw material are so small, both in volume and value, that it is not practical to compute the amount of freight applicable to each unit. A purchase of 1,000 boxes of stove bolts, wood screws, and cotter keys of various sizes might be accompanied by an incoming freight charge of \$7.54. Should the freight charge be spread over the material on the basis of the number of boxes received, or on the basis of the purchase price of the various items and sizes? The value in knowing the amount of freight applicable to a package of $100 \frac{1}{4} \times 2$ -inch Round Head Stove Bolts is not commensurate with the clerical cost of computation. If the freight charges are arbitrarily added to the purchase price of raw materials of this nature, unit prices are but estimates. Under such conditions the freight charges are better shown as a manufacturing overhead expense in the statement of the cost of production.

Following the figure showing the cost of raw materials used is placed the direct labor cost. The sum of these two elements of cost is sometimes known as "prime cost." This term has lost its significance, however, because of the increasing importance of manufacturing overhead expense in recent years.

Overhead expenses should be itemized in the statement of the cost of production unless the number of such items precludes itemization. In event of this situation, the manufacturing overhead items should be shown in a separate exhibit attached to the statement.

The caption "manufacturing charges" during the year 19—, represents the elements of cost charged into production during

the year, and does not include the accumulated costs represented by the work in process inventory at the beginning of the period. To the total manufacturing charges comprising the three elements of cost charged into production during the period, is added the value of the inventory of work in process at the beginning of the year. This inventory value was inherited from the preceding period. As pointed out in Chap. XVIII, however, the inventory of work in process at the beginning of the period must be considered an additional cost of production applicable to the present period. This inventory value must be added to the elements of cost charged into production during the year to ascertain the total charges to production during the year. To arrive at the cost of goods produced, the inventory of the work in process at the end of the accounting period is deducted from the amount representing the total charges into production during the year. The closing inventory of work in process is considered as an inventory value applicable to the following period, since it represents the cost of uncompleted work—unfinished jobs or orders which will not be completed until the next accounting period. This closing inventory value becomes an expense of the next accounting period.

There is an optional plan for showing inventories in the statement of the cost of production and in the statement of income, profit and loss, other than as illustrated on pages 365 and 369. Instead of showing both the opening and closing inventory values, only the difference may be stated. The rule is as follows:

1. Where an inventory value is *smaller* at the end than at the beginning of the period, the decrease is added to the factor affected.

2. Where an inventory value is *larger* at the end than at the beginning of the period, the increase is deducted from the factor affected. Certain sections of the statement of the cost of production appearing on page 365, will illustrate the principle.

CASE 1.—AS SHOWN IN STATEMENT

Inventory, Raw Materials, Jan. 1, 19—.....	\$ 26,782.44
Net Purchases.....	59,541.44
Raw Materials Available for Use.....	<u>\$ 86,323.88</u>
Inventory, Raw Materials, Dec. 31, 19—.....	17,039.61
<i>Cost of Raw Materials Used.....</i>	<u><u>\$ 69,284.27</u></u>

Optional Plan

Net Purchases.....	\$ 59,541.44
Inventory, Raw Materials, Jan. 1, 19—.....	\$26,782.44
Inventory, Raw Materials, Dec. 31, 19—.....	<u>17,039.61</u>
Add decrease.....	9,742.83
<i>Cost of Raw Materials Used</i>	<u><u>\$ 69,284.27</u></u>

CASE 2.—AS SHOWN IN STATEMENT

Manufacturing Charges during Year 19—.....	\$116,069.63
Inventory, Work in Process, Jan. 1, 19—.....	<u>1,463.63</u>
Total Charges to Production during Year.....	\$117,533.26
Inventory, Work in Process, Dec. 31, 19—.....	<u>1,711.83</u>
<i>Cost of Goods Produced</i>	<u><u>\$115,821.43</u></u>

Optional Plan

Manufacturing Charges during Year 19—.....	\$116,069.63
Inventory, Work in Process, Jan. 1, 19—.....	\$ 1,463.63
Inventory, Work in Process, Dec. 31, 19—...	<u>1,711.83</u>
Deduct Increase.....	248.20
<i>Cost of Goods Produced</i>	<u><u>\$115,821.43</u></u>

3. The Statement of Income, Profit, and Loss.

The statement of income, profit and loss, for a manufacturing concern, as a complementary statement to the statement of the cost of production is almost identical with a profit and loss statement for a trading concern. The only difference appears in the cost of goods sold section. In the profit and loss statement for a manufacturing establishment, the cost of production displaces purchases and freight and cartage, appearing in the trading statement. One should compare the statement appearing on page 148, Chap. X with the following statement, prepared from the work-sheet illustration used in the preceding chapter, in order to observe the contrast.

One of the most important captions in the statement (Form 82) is the "cost of goods sold." The value representing the "cost of goods sold" is related to the marketing of the product. It is useful in determining selling policies and prices. If more than one line of goods is handled, the cost of each line may be recorded. By also keeping record of the sales by different lines, it is possible to determine the gross profit on each line. This information will determine whether it is profitable or not to handle certain lines.

FORM 82

THE PENN ELECTRIC ELIMINATOR COMPANY

STATEMENT OF INCOME, PROFIT AND LOSS

Jan. 1, 19— to Dec. 31, 19—

<i>Net Sales</i>		\$139,167.00
<i>Cost of Sales:</i>		
Inventory, Finished Goods, Jan. 1.....	\$ 10,417.18	
Cost of Goods Produced during the Year...	115,821.43	
<i>Cost of Manufactured Goods Available for Sale</i>	\$126,238.61	
Inventory, Finished Goods, Dec. 31, 19—.	15,977.94	
<i>Cost of Manufactured Goods Sold</i>		\$110,260.67
<i>Gross Profit from Sales</i>		\$ 28,906.33
<i>Selling Expenses:</i>		
Compensation Insurance.....	\$ 70.47	
Shipping Supplies and Expense.....	2,480.12	
Salesmen's Salaries and Commissions....	10,837.78	
Advertising.....	787.13	
Freight and Express Out.....	1,368.24	
Stationery and Office Supplies.....	137.65	
Telephone and Telegraph.....	91.42	
Postage.....	154.18	
Insurance.....	149.63	
Depreciation on Building.....	122.25	
Depreciation on Delivery Equipment....	469.93	
Depreciation on Furniture and Fixtures..	43.73	\$ 16,712.53
		\$ 12,193.80
<i>General and Administrative Expenses:</i>		
Compensation Insurance.....	\$ 26.90	
Officers' Salaries.....	6,000.00	
Office Salaries.....	1,559.20	
Stationery and Office Supplies.....	412.97	
Telephone and Telegraph.....	91.42	
Postage.....	231.27	
Insurance.....	149.62	
Depreciation on Buildings.....	122.24	
Depreciation on Furniture and Fixtures..	102.02	\$8,695.64
<i>Net Profit from Operation</i>		\$3,498.16
<i>Incidental Income:</i>		
Commissions Earned.....	\$ 449.40	
Purchase Discount.....	1,226.13	1,675.53
		\$5,173.69
<i>Incidental Expense:</i>		
Interest on Mortgage Payable.....	\$1,800.00	
Sales Discount.....	501.78	
Doubtful Accounts.....	847.51	\$3,149.29
<i>Net Profit to Surplus for the Year Jan. 1, 19—</i>		
<i>to Dec. 31, 19—</i>		\$2,024.40

4. The Cost of Goods Produced versus the Cost of Goods Sold.

There is a fundamental difference between these two captions. The former is related to production, the latter to distribution. The relationship existing between the two captions may be stated in the following manner:

a. Where the value of the cost of goods manufactured is greater than the cost of goods sold, it is usually caused by the production department producing goods faster than they are being sold, or

b. Where the value of the cost of goods manufactured is less than the cost of goods sold, the causes are usually:

(1) The production department is not functioning properly, or

(2) A special effort may have been made to dispose of goods, such as offering low prices or employing extra salesmen.

5. Principles of Unit Cost Computation.

It is quite obvious if the cost of production and the number of units produced are known quantities that the unit cost may be computed by dividing the total cost by the units produced. Unit cost should be carried out to at least four decimal places in order to effect more accurate inventory valuations. Ascertaining unit cost in this manner presents no problem as far as the mechanical procedure is concerned, but there is another problem of far-reaching importance in connection with it. The problem pertains to the principles of operating expense distribution described in the preceding chapter.

If an item is charged or credited to the Manufacturing account that does not properly belong to that revenue group, the cost of production is misstated. Misstating the cost of production causes unit cost likewise to be misstated, which in return affects the value of the finished goods inventory at the close of accounting period. And if the closing finished goods inventory is misstated, the final net profit is also misstated. Inaccurate unit costs, therefore, bring about inaccuracies in both the statement of income, profit and loss and the balance sheet, by affecting finished goods inventory, net profit, and ownership.

A combined comparative statement of the cost of production and income, profit and loss will illustrate the principles.

The following facts are available in connection with the illustration under Case 1, Form 83:

	Units	Value	Unit cost
Inventory Finished Goods, Jan. 1, 19—...	425	\$ 10,417.18	\$24.5110
Produced during the year.....	4,632	115,821.43	25.0046
Available for Sale.....	5,057	\$126,238.61	x
Sales.....	4,418	139,167.00	x
Inventory, Finished Goods, Dec. 31.....	639	\$ 15,977.94	\$25.0046

All of the units contained in the beginning inventory Jan. 1, 19—, were sold during the year.

With a production of 4,632 units at a cost of \$115,821.43, and a unit cost of \$25.0046, the finished goods inventory at the end of the year is valued at \$15,977.94, which gives a net profit of \$2,024.40. Compare these inventory and profit figures with Case 2.

The only fact in Case 2 differing from Case 1 is that the interest on mortgage (on factory building) is considered as a manufacturing expense item. This expense item of \$1,800 increased the cost of production to \$117,621.43. With no change in the number of units produced, the unit cost of production for the year amounts to \$25.3932. This gives a finished goods inventory valued at \$16,226.25, which results in a final net profit of \$2,272.71, which is \$248.31 greater than in Case 1. Thus, items which are included in manufacturing expense which are not purely manufacturing expense items, result in an inaccurate and misstated inventory figure and net profit for the period.

In Case 3, but one fact differs from Case 1 and Case 2. It is the position of the purchase discount item. In Case 3, it is considered as a deduction from the original purchase cost, instead of an incidental income. The result is, of course, that of decreasing the cost of production which shows a figure of \$114,595.30. With the same number of units produced, the unit cost is \$24.7399, which gives a value of \$15,808.80 to the inventory of finished goods at Dec. 31, 19—. Using this inventory value causes the final net profit to be \$1,855.26, or \$169.14, less than the amount shown in Case 1.

FORM 83 COMPARATIVE STATEMENT OF THE COST OF PRODUCTION

	Case 1	Case 2	Case 3
Cost of Goods Produced:			
Inventory Raw Materials, Jan. 1, 19—	\$ 26,782.44	\$ 26,782.44	\$ 26,782.44
Purchases Raw Materials.....	\$63,010.55	\$63,010.55	\$63,010.55
Purchases Returned and Allowances.....	3,469.11	3,469.11	\$3,469.11
Purchase Discount.....			1,226.13 ²
Net Purchases.....	59,541.44	59,541.44	4,695.24
Raw Materials Available for Use.....	\$ 86,323.88	\$ 86,323.88	58,315.31
Inventory Raw Materials, Dec. 31, 19—	17,039.61	17,039.61	\$ 85,097.75
Cost of Raw Materials Used.....	\$ 69,284.27	\$ 69,284.27	17,039.61
Direct Labor.....	31,233.43	31,233.43	\$ 68,058.14
Overhead Expenses:			31,233.43
Indirect Labor.....	\$ 3,243.32	\$ 3,243.32	\$ 3,243.32
Heat, Light and Power.....	2,709.10	2,709.10	2,709.10
Miscellaneous Factory Expense.....	4,675.65	4,675.65	4,675.65
Compensation Insurance.....	482.10	482.10	482.10
Telephone and Telegraph.....	45.71	45.71	45.71
Insurance.....	1,197.00	1,197.00	1,197.00
Depreciation on Buildings.....	733.48	733.48	733.48
Depreciation on Machinery.....	2,465.57	2,465.57	2,465.57
Interest on Mortgage.....	1,800.00 ¹	1,800.00 ¹	
Total Overhead Expenses.....	17,351.93	17,351.93	15,551.93
Manufacturing Charges during the year....	\$116,069.63	\$117,869.63	\$114,843.50
Inventory Work in Process, Jan. 1, 19—	1,463.63	1,463.63	1,463.63
Total Charges to Production during Year..	\$117,533.26	\$119,333.26	\$116,307.13
Inventory Work in Process, Dec. 31, 19—	1,711.83	1,711.83	1,711.83
Cost of Goods Produced, Jan. 1, 19— to Dec. 31, 19—	\$115,821.43	\$117,621.43	\$114,595.30

COMPARATIVE STATEMENT OF INCOME, PROFIT AND LOSS

OPERATING STATEMENTS

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	Case 1	Case 2	Case 3
Net Sales.....	\$139,167.00	\$139,167.00	\$139,167.00
Inventory, Finished Goods, Jan. 1, 19—	\$ 10,417.18	\$ 10,417.18	\$ 10,417.18
Cost of Goods Produced, Jan. 1, 19— to Dec. 31, 19—	\$115,821.43	\$117,621.43	\$114,595.30
Cost of Manufactured Goods Available for Sale.....	\$126,238.61	\$128,038.61	\$125,012.48
Inventory, Finished Goods, Dec. 31, 19—	15,977.94	16,226.25	15,808.80
Cost of Manufactured Goods Sold, Jan. 1, 19—, to Dec. 31, 19—	110,260.67	111,812.36	109,203.68
Gross Profit from Sales.....	\$ 28,966.33	\$ 27,354.64	\$ 29,983.32
Distribution Expenses.....	16,712.53	16,712.53	16,712.53
General and Administrative Expenses.....	\$ 12,193.80	\$ 10,642.11	\$ 13,250.79
Net Profit from Operations.....	8,695.64	8,695.64	8,695.64
Incidental Income:	\$ 3,498.16	\$ 1,946.47	\$ 4,555.15
Commissions Earned.....	\$ 449.40	\$ 449.40	449.40
Purchase Discounts.....	1,226.13 ²	1,226.13	
Incidental Expenses:	1,675.53	1,675.53	
Interest on Mortgage.....	\$ 5,173.69	\$ 3,622.00	\$ 5,004.55
Sales Discounts.....	\$ 1,800.00 ¹		\$ 1,800.00
Doubtful Accounts.....	501.78	\$ 501.78	501.78
	847.51	847.51	847.51
Final Net Profit to Surplus.....	3,149.29	1,349.29	3,149.29
	\$ 2,024.40	\$ 2,272.71	\$ 1,855.26

¹ Note the difference in position of "Interest on Mortgage" in Cases 1 and 2.² Note the difference in position of "Purchase Discount" in Cases 1 and 3.

A comparison of the three cases portrays the importance of being familiar with the nature of the items reflected in manufacturing cost. Conservative accounting practice would advocate handling the items as shown under Case 1, or Case 3.

6. Other Inventory Problems.

Mention was made in Chap. XIII of the value of raw materials inventory to be used when the market price was lower than cost at the close of the period. It was stated in that chapter that the cost value should be used in computing the cost of production, and that adjustment for the decrease in value should be made through the Profit and Loss account. The reason for this may be seen in the following contrasted statements:

FORM 84

COMPARATIVE STATEMENT SHOWING PROFIT VARIATION DUE TO THE POSITION OF THE RAW MATERIAL INVENTORY, WHICH HAS A MARKET VALUE LOWER THAN COST VALUE AT THE TIME OF CLOSING

Inventory, Raw Materials, Jan. 1, 19—	\$ 5,000	\$ 5,000
Net Purchases.....	60,000	60,000
Cost of Raw Materials Available for Use.....	\$ 65,000	\$ 65,000
Inventory, Raw Materials, Dec. 31, 19—	8,000 (Cost)	6,000 (Market)
Cost of Raw Materials Used.....	\$ 57,000	\$ 59,000
Direct Labor.....	75,000	75,000
Overhead Expenses.....	110,000	110,000
	\$242,000	\$244,000
Add a decrease in Work in Process Inventories	2,500	2,500
Cost of Goods produced.....	<u>\$244,500</u>	<u>\$246,500</u>
(Production, 100,000 units)		
Unit Cost.....	<u>\$2.445</u>	<u>\$2.465</u>
Inventory, Finished Goods, Jan. 1, 19—	\$ 9,600.00	\$ 9,600.00
Cost of Goods Produced.....	244,500.00	246,500.00
Cost of Goods Available for Sale.....	\$254,100.00	\$256,100.00
Inventory, Finished Goods:		
Dec. 31, 19— (4,500 units at respective unit costs).....	\$ 11,002.50	\$ 11,092.50
Cost of Sales.....	\$243,097.50	\$245,007.50
Sales.....	350,000.00	350,000.00
Gross Profit.....	\$106,902.50	\$104,992.50
Selling and Administrative Expenses.....	88,000.00	88,000.00
Net Profit.....	\$ 18,902.50	\$ 16,992.50
Profit and Loss Charge for decrease in Raw Material Inventory.....	2,000.00	
	<u>\$ 16,902.50</u>	<u>\$ 16,992.50</u>

Where the cost value of the raw material inventory, \$8,000, is used, and the \$2,000 decrease in cost is deducted as a profit

and loss item, the net profit varies in an amount of \$90 from the other illustration. The reason for this is that the finished goods inventory at Dec. 31, 19— (in the right-hand column) is overstated by \$90. This means that the number of units remaining unsold at the close of the period reflects the overstated unit cost of production. In showing the market value of the inventory, \$6,000, the cost of raw materials used was overstated, and the unit cost was increased \$0.02. The number of units in the inventory (4,500) units, multiplied by the overstated unit cost (\$0.02) gives the same figure of \$90, the overstated or unrealized profit.

To adjust the inventory account to agree with the market value figure, where cost has been used in statement preparation, the following general journal entry is required:

Profit and Loss.....	\$2,000
Inventory.....	\$2,000
To adjust the inventory so as to reflect market rather than cost value, at the date of closing, Dec. 31, 19—	

7. Ascertaining Unknown Unit Quantities.

In connection with the values of the cost of goods produced and the cost of goods sold, there arises the problem of ascertaining unknown unit quantities. Unit quantities produced, sold, and in the inventories of finished goods at the beginning and at the close of the fiscal period may be unknown. But if any three of these items are known, the fourth or unknown quantity may be computed. Units available for sale can always be determined from the three given quantities. For ease in making reference to the five quantities, they will be numbered as follows:

Number	Item
1	Inventory Finished Goods at beginning of period.
2	Production during the period.
3	Available for sale during the period.
4	Sales during the period.
5	Inventory Finished Goods at close of period.

CASE 1

Known quantities are items 1, 2, and 4. To find the number of units in the finished goods inventory at the close of the period:

Number	Item Name	Units
1	Inventory at beginning of period	425
2	Produced during the period	<u>4,632</u>
3	Available for sale	<u>5,057</u>
4	Sales	<u>4,418</u>
5	Inventory at close of period(?)	<u><u>639</u></u>

CASE 2

Known quantities are items 1, 2, and 5. To find the number of units sold during the period:

Number	Item Name	Units
1	Inventory at beginning of period	425
2	Produced during the period	<u>4,632</u>
3	Available for sale	<u>5,057</u>
5	Inventory at close of period	<u>639</u>
4	Sales during period(?)	<u><u>4,418</u></u>

CASE 3

Known quantities are items number 1, 4 and 5. To find the number of units produced during the period:

Number	Item Name	Units
5	Inventory at close of period	639
4	Sales during period	<u>4,418</u>
3	Available for sale	<u>5,057</u>
1	Inventory at beginning of period	<u>425</u>
2	Produced during the period(?)	<u><u>4,632</u></u>

CASE 4

Known quantities are items 2, 4 and 5. To find the number of units in the finished goods inventory at the beginning of the period:

Number	Item Name	Units
5	Inventory at close of period	639
4	Sales during period	<u>4,418</u>
3	Available for sale	<u>5,057</u>
2	Produced during the period	<u>4,632</u>
1	Inventory at beginning of period(?)	<u><u>425</u></u>

The important concept to remember in any of the computations is always to arrive at the number of units available for sale.

8. Preparing Monthly Operating Statements.

The preparation of monthly operating statements presents no particular problems. Certain principles must be kept in mind, however, in their preparation. The procedure is to:

1. Prepare a trial balance at the end of the month.
2. Ascertain all adjustments pertaining to the business for the month.
3. Prepare work papers.
4. Prepare financial statements.
5. Journalize and post adjusting journal entries (excepting the inventory values).

The adjustments for each month are similar to those necessary at the end of a fiscal year except for the time period. That is, the depreciation charges for a month would be one-twelfth of the per annum charge. Doubtful accounts may be estimated on the sales for the month. Other expense and income items are likewise adjusted for the one-month period. Although adjusting entries (excepting for inventories) are posted to ledger accounts, no monthly closing entries are made. The purpose of preparing monthly statements is to appraise the management of the operating results from month to month. Waiting until the end of the year to learn of the financial condition of the business does not constitute adequate control. Monthly operating results will disclose operating inefficiencies and the existence of any malconditions which otherwise might not be noticed.

Arriving at monthly inventory values constitutes the biggest problem of monthly statement preparation. If perpetual inventories are a part of the stores and warehouse records, as they should be, the monthly raw material inventory values are readily ascertained; if not, a physical count is the only accurate method available.

A more difficult problem arises in connection with the work in process inventory. Unless a cost system is in operation, the closing value of the work in process must be estimated. The many expense items which enter into the cost of production make it difficult to value the uncompleted work in process unless individual costs on each order are collected.

Finished goods inventory value may be approximated if no perpetual inventory is maintained. The value is computed monthly by multiplying the net sales for the month by the

average rate of gross profit for a period of past years as already briefly described in Chap. XIX. That this method will give an inventory value approximately accurate is based on the principle that the rate of gross profit on sales never varies to any material amount from year to year. This is true if the rate of mark-on to the cost, for the purpose of setting selling prices, remains practically uniform from year to year. And this is generally the case in a competitive business. The average gross profit percentage for a period of several years multiplied by the sales for any one month, therefore, will give the estimated gross profit for the month. The difference between this amount and the net sales will give the estimated cost of sales. The inventory at the beginning of the period plus the purchases represents the cost of goods available for sale. The difference between the cost of goods available for sale and the cost of the sales equals the estimated value of the closing inventory of finished goods.

Where the finished goods inventory is estimated monthly by this process, the value ascertained is not recorded in the ledger. It is merely used in the preparation of the work sheet and the monthly financial statements, which are only estimates.

Questions

1. Distinguish clearly between the cost of goods produced and the cost of goods sold.

2. Outline the form of a statement of the cost of production, and describe each of its major divisions.

3. When should freight and cartage on raw materials be treated as an additional cost of the raw materials, and under what conditions should the same expense be considered as a manufacturing overhead?

4. Describe the handling of the work in process inventories in the cost of production statement.

5. When the cost of production is shown in a separate statement, in what manner does the statement of income, profit and loss for a manufacturing concern differ from that of a trading concern?

6. What facts important to managerial control may be ascertained by comparing the relative values of the cost of goods produced and the cost of goods sold?

7. In what manner is the unit cost of production computed?

8. What is the effect upon net profit of charging an expense item erroneously to manufacturing expense? Describe thoroughly, step by step.

9. What is the effect upon net profit of crediting purchase discount to manufacturing expense? Discuss fully.

10. If a lower inventory figure than cost is used in the preparation of an operating statement, in what position should it appear in the statement in order that gross profit will not be misstated?

11. The following factors in terms of units are involved in the preparation of the statement of income, profit and loss for a manufacturing concern:

1. Inventory of finished goods at beginning of period.
2. Inventory of finished goods at close of period.
3. Production.
4. Sales.
 - a. Using your own figures for 1, 2, and 3, compute 4.
 - b. Using your own figures for 2, 3, and 4, compute 1.
 - c. Using your own figures for 1, 3, and 4, compute 2.
 - d. Using your own figures for 1, 2, and 4, compute 3.

12. Why are monthly operating statements prepared?

13. What are the steps involved in the preparation of monthly statements?

14. What is the inventory problem in connection with monthly closing for a manufacturing concern which has no cost system?

PART V

THE OUTLINE OF ADVANCED COST FINDING

CHAPTER XXVI

ENGINEERING AND THE DYNAMIC USE OF COSTS

The student who has mastered the technical phases of elementary factory and general accounting, as covered in this book, must now realize that extensive and important aspects of factory accounting remain untouched. Not only must a cost department record and classify all the outlays involved in production; its more important function is so to develop its reports and its service to the plant executives as to assist in the formulation of plant policy and in guiding and controlling future developments.

Two decades ago cost accounting did little more than offer a historic transcript of past cost events. Such transcripts often lagged so far behind the immediate production activities that they were of little value in solving the specific problems of the moment.

This earlier period of cost accounting, however, has a real value in business that must not be overlooked. Early use of costs contributed much as a guide to proper selling prices for different products, and as an effective tool in assuring more scientific bidding. A study of business failures of this period shows that a large portion of those establishments who "went under" had no adequate cost system, while those who "weathered the gale" showed almost a unanimous use of cost accounting as a necessary tool.

Obviously, however, with cost activities almost entirely limited to the pricing field there was little interest manifested by the engineers in the science of costs. Engineering problems were intraplant ones where early cost procedures offered very little practical application.

Fundamental changes in industry today are demanding new developments in cost accounting. The rapid trend into

standardization, the development of high-speed tools with the consequent swift flow of product through the plant, and the rapid shift from manual to machine production have brought upon costs a tremendous responsibility. Costs must now measure internal plant performance. And what is more important, they must measure this performance in terms of predetermined standards. Thus, standard costs and budgets now must act as a barometer for plant managers, telling them specifically when, where, and why off-standard conditions exist. Further, they must be told the cost of these variances from standard production, in terms of dollars and cents.

These newer uses of costs are certain of evoking a live interest and enthusiasm from the progressive engineers. They are the ones who are responsible for the proper layout of machines and the flow of materials. They are the designers of the product and the methods of its manufacture. They establish the standard rates for labor, for materials, and for manufacturing overhead expense.

They, therefore, are certain of taking an active interest in such standard costs as measure in terms of money and performance of those activities for which they are directly responsible.

Consider, if you will, the importance of costs to a production engineer if, daily or weekly, a report is given to him covering every costing center with detail analyses of any abnormal conditions. The live engineer will look to such cost reports as the one reliable source of information upon which he can base suggested changes and improvements.

Once the engineer sees, and sees clearly, this close relation between costs and daily production, he will no more consider cost finding as a stale and frozen history of past events. Rather, he will hold his cost data as the most valuable source of information upon which the formulation of plant policies can be based.

When forward looking engineers grasp the full significance of this phase of accounting, it will mean the dynamic use of costs.

More and more it is recognized that costs are an essential tool of the engineer, if he is to measure accurately and completely the following desirable features of production.

1. The cost of off-standard performance of each labor unit of the plant.
2. The specific location of waste and its cost.
3. The advantages in cost reduction coming where machines displace man power.
4. The proper conserving of materials by perpetual control over all forms of inventory.
5. The analysis of idle equipment and volume variance with its cost and its causes.
6. The determination of when it is cheaper to buy than to make.
7. The development of scientific salvaging and proper repair control.
8. The systematic planning of production so as to secure the most rapid turnover of capital.
9. The proper allocation of all overhead expenses so as to determine costs of specific products accurately.
10. The budgeting of all outlays so as to keep expenditures within predetermined limitations.

These ten activities to which many others might be added, are dependent four square upon an adequate cost system fully understood and continuously used by the managing engineers. Without costs, such activities as the above either go entirely unconsidered or incorrectly measured.

The avowed purpose of Vol. II, *Standard Costs and Budgets*, is definitely to place before the student of engineering the practical application of the technical elements of cost accounting which he has covered in this volume. To make these practical applications it will be necessary to go further into the principles of cost, needed to obtain the adequate controls over labor, material, and overhead expense.

Following the development of these higher principles of cost finding, considerable space is given to the workings of standard costs and operating budgets. There is no more valuable or more interesting phase of the newer uses of costs than this one of standard costs and budgets. Standard outputs, production targets, expense budgets, performance quotas, and the like have an established place in the modern plant.

A sparkling piece of psychology is involved in the use of standards that should be understood by the engineer. Psychologists tell us that standards or "bogies" shift the deter-

mination of what shall constitute a fair day's work or output from subjective to objective factors. Bringing that statement out of its academic phraseology, we discover that no employee is capable of determining what a reasonable output shall be. His prejudices, his habits, and his own interests preclude his finding what the output of a machine or a cost center should be. Research, scientific measurements, and experience must establish the fair standards. This work falls upon the engineers.

Costs supplement these established standards by comparing actual performance with them and reducing all to a money basis. It is sufficient at this time to realize that the use of these standards is of major importance in bringing workers to greater capacity. Something to *shoot at* not only increases the accuracy of one's shot, but adds zest and spirit to the game of shooting. Definite standards, therefore, pull up the worker to productive efforts that he formerly never realized he was capable of attaining. And because of this lift that standards give to industrial effort, considerable time is spent discussing their nature and use in the next volume.

The third major division of Vol. II is concerned with the proper presentation of costs for the use of engineers. No matter how complete a cost system may be in its technical operations, it fails completely if the cost results do not meet the needs and the wishes of the plant executives, particularly the engineers. In short, the cost reports must be adapted to the need of the plant engineers and plant executives.

Realizing the truth of this contention, much effort must be used in the proper shaping of cost reports to meet the needs of those who use them. It calls for an analysis of all executive and managerial effort throughout the plant in order to find what specific service a specific cost record can be, to a specific executive on specific problems. The extent to which cost presentations are adapted to the practical needs of the engineers and other plant officials is the extent to which cost accounting will become an effective and worthwhile tool of management.

In following the outline of the higher cost principles, standard and budgetary use of costs, and cost presentations, which three divisions form the body of Vol. II, it is highly advisable that the student keep himself in touch with definite manufacturing plants in the neighborhood in which he lives. Only as

the cost problems outlined in Vol. II have a concrete application, to industries in which the student has at least definite acquaintance, do they succeed in impressing him as to their importance and as to their effectiveness in gaining better accounting control of industry.

Intelligent use of cost data by engineers is certain of bringing efficient and economical operation. It is incumbent upon the engineering student of costs to follow carefully such procedures and such presentations as will make this intelligent use of costs possible.

Questions

1. What is the function of a cost department?
2. When cost accounting first came into use what was the chief service it performed?
3. What are the newer uses of cost finding and what factors brought them about?
4. Why is the engineer interested in these newer uses of costs?
5. A study of cost finding enables the engineer to comprehend more adequately what kind of production problems?

PROBLEMS

PROBLEMS

Chapter II

1. Classify the following names of accounts under one of the five subdivisions of the two major groups of accounts:

Printing	Assembly Inspection
Acceptances Receivable	Securities in Vault
Royalties Received	Packing Supplies
Wages Payable	Scrap Sales
Dies and Molds	Donations
Officers' Bonus	Compensation Insurance
Discount Earned	Warehouse Rental Received

2. Set up accounts in your ledger with the following parties and enter therein the transactions listed under each:

A. B. Jones:

19—Feb. 1. He purchased goods.....	\$ 50.00
4. He purchased goods.....	30.00
6. He paid cash.....	50.00
9. He bought goods.....	20.45
14. He bought goods.....	165.71
18. He paid cash.....	30.00

Smooth and Ruff:

19—Mar. 25. Purchased goods from them.....	\$ 75.00
31. Purchased goods from them.....	225.00
Apr. 4. Paid them cash in full	
9. Purchased goods from them.....	54.71
12. Cash payment to them.....	45.66
15. Purchased goods from them.....	50.00
20. Paid balance of bill of Apr. 9	

The Union Supply Company:

19—May 2. Sold them goods.....	\$4,792.10
13. They returned goods which they claimed were not ordered.....	856.75
31. Received cash from them.....	3,935.35

In each case:

a. Show the balance in the account with the proper ruling.

b. Classify the account by giving it as many descriptive names as possible.

3. From the following data prepare a Cash account, showing the account properly ruled and balanced at May 31:

19—

May 1. Original investment of L. M. Oakes.....	\$8,750.00
2. Paid rent for May.....	150.00
3. Paid Penn Auto Company for delivery truck.,.,.,	1,422.00

4. Received for goods sold.....	177.22
5. Received for merchandise.....	229.21
8. Paid K. Z. Coleman for goods.....	564.27
11. Received from I. M. Rolling, a customer.....	179.35
15. Paid wages.....	227.90
19. Cash sales for the week.....	854.83
23. Paid for office and store supplies.....	28.99
26. Received from C. G. Burroughs, a customer.....	166.22
29. L. M. Oakes withdrew for personal use.....	50.00
31. Paid wages.....	210.60

4. Using the following data taken from the books of M. E. Coulter, set up a statement which will reflect the ownership equation at Dec.

31, 19—:

Cash in Bank.....	\$ 3,990.76
Accounts Receivable (Customers).....	26,482.10
Machinery and Equipment.....	18,592.53
Accounts Payable (Creditors).....	15,465.10
Small Tools.....	1,410.65
Notes Receivable.....	2,982.00
Inventory.....	18,096.29
Trade Acceptances Payable.....	5,000.00
Furniture and Fixtures.....	1,155.23
Securities Owned.....	2,000.00

5. Prepare balance sheets from the following information presented by E. D. Carroll at June 30, 19—:

	Jan. 1, 19—	June 30, 19—
Inventory.....	\$ 6,500.00	\$ 8,675.50
Cash.....	850.00	9,950.00
Delivery Equipment.....	1,860.00	3,581.00
Accounts Receivable.....	16,667.00	24,019.00
Notes Payable.....	3,737.00	3,000.00
Building.....	6,750.00	6,687.00
Land.....	8,000.00	8,000.00
Store Fixtures.....	740.00	703.00
Accounts Payable.....	7,425.00	6,750.00
Office Equipment.....	800.00	760.00
Notes Receivable.....	1,533.00	2,015.00

Mr. Carroll also stated that for the six-month period ended June 30, 19—, he ascertained the following additional information:

Net Sales.....	\$187,500.00
Cost of Sales.....	113,750.00
Selling and Administrative Expenses.....	51,647.50

a. From the above information prepare a statement of income, profit and loss.

b. What relationship exists between this profit and loss statement and the ownership as reflected in the above balance sheets?

6. George C. Main entered into the hardware business at Jan. 1, 1928. At the time he began business he deposited \$7,500 cash with the Oakland National Bank to use for working capital. His initial stock of mer-

chandise cost him \$73,800.60. He owed for \$20,000 of the merchandise in the form of 90-day notes signed by him and endorsed by his father-in-law. He considered a building owned by him as property of the business, having a value of \$30,000. The land on which the building was located was valued at \$10,000. There was a mortgage against the real estate in the amount of \$15,000.

At June 30, 1928, Mr. Main found his merchandise to have an inventory value of \$62,784.10. He had \$3,475.20 cash in the bank. Creditors were owed \$15,000, on open account. He purchased a delivery truck on Jan. 5, 1928, paying \$2,100 cash, which he considered to have a value of \$1,837.50, on June 30. \$5,000 notes were paid off during the first six months. Customers owe \$20,647.92. He had furniture and fixtures valued at \$978.42. He considered the building to have a value of \$29,700. The mortgage remained at the same value as at Jan. 1.

1. Prepare statements to show the financial condition of Mr. Main's business at Jan. 1, and June 30, respectively.

2. How much did Mr. Main gain or lose from the operation of the business during the first six months?

3. Would the net gain or loss vary any if Mr. Main had made an additional cash investment of \$5,000, during the period? If he had withdrawn \$2,500, during the same period?

Chapter III

1. Record the following transactions in the properly named accounts.
19—

Jan. 2. D. Downing opened an electric supply store this date. He placed \$44,700 in the Keystone Bank to use as working capital.

3. Downing gave a check for \$200 to Oakland Real Estate Company for one month's rent in advance.

4. The New England Novelty Company sold Downing a bill of goods invoiced at \$22,790.38, terms net 30 days.

5. Downing hired ten clerks, two office girls, and a truck driver this date, all of whom he was to pay \$30 a week. The new employees began work Jan. 7.

7. Purchased delivery truck, costing \$921, from Penn Auto Company, giving a 12-month note in payment.

8. Sent check for \$18 with application for automobile license to the motor registration department.

14. Cash sales for week amounted to \$3,481.73.

18. Customer paying \$9.75 cash for some merchandise on Jan. 14, returned it and was given a cash refund.

21. Paid wages \$390, by check for the week ended Jan. 14.

25. Purchased an adding machine, safe, and new cash register, paying cash \$745.50.

28. Paid wages \$390, by check, for the week ended Jan. 21.

29. Murphy and Company bought \$1,560.20 merchandise on account. They gave a check for one-half of the amount and a 30-day 6 per cent note for \$500, in part payment.

2. Record the following transactions in the properly named accounts:
19—

- Jan. 2. L. R. Davidson began business this date, investing \$20,000 cash and a delivery truck valued at \$700.
4. Purchased \$7,500 merchandise from Kloppers Company, terms 30 days net.
 5. Paid one month's rent in advance, \$175.
 6. Harry S. Coleman purchased goods on account \$647.50.
 9. Sold merchandise for cash, \$600.
 11. Sold merchandise to McClane and Company on account, \$2,169.96, terms 30 days net.
 12. Purchased merchandise amounting to \$5,000 from Kloppers Company on account.
 14. Returned \$200 worth merchandise to Kloppers Company on account of being defective.
 16. Davidson withdrew \$100 cash for personal use.
 20. Allowed McClane and Company \$20 for merchandise damaged in transit.
 25. Paid \$25.60 for automobile repairs, gasoline, and oil.
 27. Sent Kloppers Company a check for \$7,000.
 28. McClane and Company sent a check for \$2,000.
 29. Paid salaries for month, \$250.
 30. Received a 30-day 6 per cent interest-bearing note from Harry S. Coleman, in settlement of his account.
 31. Gave Kloppers Company a note in settlement of the purchase made from them on Jan. 12.

3. Enter the following transactions in properly named accounts:
19—

- Mar. 1. C. C. Moore embarked in the hardware business. He invested \$22,500 cash, an automobile truck valued at \$750, and a safe valued at \$200.
2. Purchased \$8,465 merchandise from Keystone Supply Company, terms 2/10, net 30.
 3. Sent Penn Realty Company check for rent, \$150.
 5. Purchased cash register from Union Register Company, for cash \$365.
 6. Cash sales for day amounted to \$276.
 7. Sold Cole and Company merchandise on account, \$300, terms 1/10—n/30.
 8. Returned \$165 merchandise to Keystone Supply Company, receiving a credit memorandum for same.
 10. Paid cash for postage \$10; office supplies \$15.
 12. Gave Keystone Company check for one-half of balance due them less the discount.
 14. Cash sales for day, \$156.
 16. Sold Boggs and Company a bill of goods \$847, net 30 days.
 17. Received check from Cole and Company for amount owed in full less the discount.

22. Dale and Todd purchased \$1,500 merchandise on account, n/30.
24. Purchased \$4,755 merchandise on account from Globe Supply Company.
29. Dale and Todd sent a 30-day, 6 per cent note for \$750 to apply on account.
30. Paid salaries for month, \$475.
31. Gave Keystone Company a 6 per cent, 60-day note for balance due them.

Purchased 50 kegs of nails from American Nail Company, 2/10—n/30. Amount of invoice, \$250.

4. Enter the following transactions in the properly named accounts in the ledger:

19—

- Jan. 3. A. W. Bass and A. H. Blass entered the builder's supply business, each investing \$7,500 cash, which was deposited in the Shadyside National Bank.
4. Bought an automobile truck costing \$1,500 cash.
 5. Purchased plaster on account from Indian Plaster Company, \$1,475.
Purchased sand from Allegheny Dredging Company, \$275, net 30 days.
 6. Sold Fisher and Fundis a bill of goods on account, \$1,125.
Purchased lumber from Fox and Harris, paying cash \$1,600.
 7. Paid yard rent for the month of January by cash, \$250. Automobile insurance against fire, theft, liability, and property damage for the year cost \$176.40, which was paid by cash.
 8. Sold L. I. McQueen a bill of goods on account amounting to \$2,297.63.
 10. Paid cash for gasoline for truck \$9.80.
 11. Bought a typewriter and an adding machine from the Nu-Equipment Corporation paying cash \$125, and \$175 for each, respectively.
 13. Purchased tile on account, net 30 days, from Walsh & Company, amounting to \$755.
 14. Purchased three tons of coal for heating office, giving a check for \$15.
 17. Paid two weeks' salaries to yard men \$200; office help, \$50.
 18. Paid \$13.50 cash to Knute Nolin for hauling rubbish.
 19. Received a 30-day 6 per cent note for \$1,000, from Fisher and Fundis.
 20. Sold Fisher and Fundis a bill of goods on account, \$567.50.
 21. Gave the Allegheny Dredging Company a 60-day 6 per cent note in settlement of their invoice of Jan. 5.
 22. Sent a check to the Indian Plaster Company for \$1,475.
Cash sales for the day totaled \$745.
 24. Purchased lumber on account, net 30 days, from Fox and Harris, \$950.

Purchased sand and gravel on account from Allegheny Dredging Company, \$479.20.

Purchased cement on account, net 30 days, from Indian Plaster Company, \$1,976.80.

25. Gave a check for \$18.60, to Johnson & Company for office supplies.

26. Sold to W. H. Cheffey on account, a bill of goods amounting to \$1,298.40; to W. F. Marsh \$3,647.88, also on account.

27. Bought plaster on account from the Indian Plaster Company, amounting to \$4,990.

28. Received a note from L. I. McQueen, in settlement of his purchase of Jan. 8.

29. Cash sales for the day totaled \$849.94.

Sold L. I. McQueen a bill of goods on account, amounting to \$847.98.

W. F. Marsh returned defective tile, for which he was allowed a credit of \$70.65.

31. Defective tile were returned to Walsh and Company. They allowed credit of \$47.10.

5. The following transactions were recorded during the month of March, 19—, in the ledger of H. R. Hines.

Cash		Purchases		K. R. Davis	
\$6,000	\$ 200	\$3,000	\$200	\$2,000	\$3,000
5,000	500	6,000			
10	600				
	500				
	2,000				
	175				
	260				
H. R. Hines, Capital		Rent		Ajax Novelty Co.	
	\$6,000	\$200		\$375	\$6,000
Notes Payable		Notes Receivable		Insurance	
	\$2,000	\$1,000		\$14	
H. R. Hines, Personal		W. L. Parker		Sales	
Cash \$500	Cash \$5,000	\$1,500	\$1,000		\$1,500
Merchandise 200					7,000
Salaries		D. P. Jones		Prepaid Insurance	
\$600		\$7,000	\$55	\$500	\$14
Delivery Equipment		Sales Returns		Taxes	
\$2,000		\$55		\$175	
Purchase Returns		Interest Received		Delivery Supplies	
	\$375		\$10	\$260	

Unsold merchandise on hand at Mar. 31 amounted to \$1,610.

From the above accounts prepare:

1. Statement of income, profit and loss.
2. Statement of ownership.
3. Balance sheet.

Chapter IV

NOTE TO INSTRUCTOR: Have the students retain the corrected solutions to any of the first six problems in this chapter to be used as a basis for posting and trial balance exercises in connection with Chap. V.

1. Enter the following transactions in the proper special journals:
19—

- July 1. Thomas Belfour opened a machinist's supply house. He placed \$5,000 in a checking account at the Norse National Bank. He also turned over to the new business a personal, non-interest-bearing note for \$1,000, made out in his favor by George Klewer, due six months from its date of June 1, 19—.
2. Purchased merchandise for cash, \$975.
 3. Sold merchandise for cash, \$590.
 4. Sold goods for cash, \$366.
 5. Bought machinery for use in the repair shop which cost \$825 cash. Bought merchandise for cash, \$2,469.
 6. Theodore Church Company sold Belfour merchandise on account, the invoice amounting to \$999. Bought coal for use in the shop for which \$56 cash was paid.
 7. Paid the Bell Telephone Company \$10 for telephone installation. Sold merchandise for cash amounting to \$1,175.
 9. Sold goods on account to Andrew Hemm, amounting to \$597.
 10. Belfour withdrew cash for personal use in the amount of \$75. Purchased merchandise from the Foley Fan Company on account, amounting to \$1,500.
 11. Bought office supplies from Mellor & Company, on account \$52.
 13. Sold merchandise for cash, \$654.
 14. Bought goods from Peter Porter Machine Company on account, \$2,255.
 16. Purchased merchandise for cash, \$1,177.
 17. Sold merchandise to F. M. Thrasher on account, \$687. Paid clerks' wages, \$125.
 18. Sold merchandise to L. F. Grimes on account, \$1,850.
 21. Belfour withdrew merchandise costing \$10, for personal use.
 23. Sold L. M. Brown on account, goods invoiced at \$510.
 24. Purchased shop supplies for cash, \$75.
 27. Received a 30-day, 6 per cent note dated July 26, from F. M. Thrasher in payment in full of the invoice of July 17.
 29. Purchased on account from Morgan & Company goods costing \$2,066.
 30. Gave a 60-day, 6 per cent note dated this date to the Peter Porter Machine Company in payment of their invoice July 14. Sold goods to Vernor & Company on account, \$1,725.

31. Belfour made an additional cash investment of \$1,500. Paid Theodore Church Company \$500 on account. Andrew Hemm paid his account in full.

Total and rule the columns in the different journals except the general journal.

2. Enter the following transactions in the proper journals:

19—

- Oct. 1. Harry Hayward opened a builder's supply business, investing the following assets: cash, \$5,000; land, \$5,000; building, \$10,000.
3. Purchased from Engelder & Company on account, goods costing \$4,960, terms, 2/10—n/30; from Welsh and Hagen on account, \$6,742, net 30 days.
5. Sold merchandise to Maynard & Company on account, \$3,645, terms 1/10—n/30; to Young & Green on account, \$2,781, terms 1/10—n/30.
7. Purchased a delivery truck from Hoosier Truck Company, paying cash \$950.
8. Purchased office supplies on account from Bosart Company, \$30, net 30 days.
13. Paid Engelder & Company the amount owed them in full to date less the discount.
15. Maynard & Company paid their account in full to date less the discount.
18. Paid salaries for the first two weeks, \$225.
19. Hayward withdrew \$50 cash.
23. The Sunlight Corporation purchased goods to the amount of \$632.10, terms net 30 days.
26. Purchased goods from Engelder & Company, \$2,983.20, terms 2/10—n/30.
27. Gave a 6 per cent, 60-day note dated today to Welsh and Hagen in payment of their account.
31. Paid the Park Avenue Garage \$42.56, for repairs, gasoline, and oil for the truck. Cash sales for the day amounted to \$864.77.

Total and rule the columns in the journals except the general journal.

3. Record the following transactions in the proper journals:

19—

- Mar. 1. C. L. Masters entered the coal business, investing \$5,000 cash, and a plot of ground for a sales yard valued at \$6,000.
2. Purchased two trucks from Liberty Sales Company for \$6,000, paying \$1,000 cash and giving a note for the balance due in one year.
6. Paid L. E. and W. Railway Company \$2,500 cash for side-track built adjacent to property.
8. Received three carloads of coal from Lincoln Coal Company, 1/10—n/30, invoices amounting to \$476.25.
9. Paid L. E. and W. Railway Company freight on coal received on Mar. 8; amount \$264.20.

13. Sold Woodside School Board on account \$156.
15. Cash sales for day, \$294.
18. Received four carloads coal from Crooked Creek Coal Company. Amount of invoice \$596.22, terms 1/10—n/30.
20. Paid wages to truck drivers and coal handlers, \$176.25.
25. Woodside School sent check for \$100 on account.
30. Sent Lincoln Coal Company check for \$300.
31. Sold Mefort and Company on account, \$398.10.

Total and rule the columns in the several journals except the general journal.

4. Enter the following transactions in the proper special journals:

19—

- Mar. 1. C. C. Moore entered the hardware business. He invested \$22,500 cash, an automobile truck valued at \$750, and a safe valued at \$200.
2. Purchased \$8,465 merchandise from Keystone Supply Company. Terms 2/10—n/30.
3. Sent Penn Realty Company check for rent, \$150.
5. Purchased cash register from Union Register Company, for cash, \$365.
6. Cash sales for day amounted to \$276.
7. Sold Cole and Company merchandise on account, \$300. Terms, 1/10—n/30.
8. Returned \$165 merchandise to Keystone Supply Company, receiving a credit memorandum for same.
10. Paid cash for postage, \$10; office supplies, \$15.
12. Gave Keystone Supply Company check for one-half of balance due them less the discount.
14. Cash sales for day, \$156.
16. Sold Boggs and Company a bill of goods \$847, net 30 days.
17. Received check from Cole and Company for amount owed in full less the discount.
22. Dale and Todd purchased \$1,500 merchandise on account, n/30.
24. Purchased \$4,755 merchandise on account from Globe Supply Company, 1/10—n/30.
29. Dale and Todd sent a 30-day, 6 per cent note dated today for \$750 to apply on account.
30. Paid salaries for month, \$475.
31. Gave Keystone Company a 6 per cent, 60-day note dated Apr. 1, for balance due them.
- Purchased 50 kegs of nails from American Nail Company, 2/10—n/30. Amount of invoice, \$250.

Total and rule the columns in the several journals except the general journal.

5. Journalize the following transactions in the proper books of original entry:

- Feb. 1. W. E. Conkel opened a miner's supply house, investing \$5,000 cash. Paid rent for the month by cash, \$70.

2. Purchased goods from Higgins & Company for cash, \$300.
3. Sold H. Peters a bill of goods for \$75, on account, n/30.
4. Sold merchandise to J. R. Johnson on account, \$50, n/30.
5. Bought merchandise on account, as shown on Elliot & Porter's invoice for \$350, n/30. Received cash on account from H. Peters, \$50.
6. Sold to D. Downing, on his 10-day note at 6 per cent dated today, goods to the value of \$126.50. Paid the bookkeeper's weekly wage of \$25. Purchased \$1,960.77 merchandise on account from Donlee and Company.
8. Conkel withdrew for his personal use \$55 in cash.
9. Sold W. Cole, on account, \$123.45 worth of merchandise, terms n/30.
0. Received from J. R. Johnson cash which paid his account in full. Sold H. Peters on account, \$100, n/30.
13. Paid bookkeeper's weekly wage by cash.
16. Received from D. Downing his check for \$126.71 to redeem his note of Feb. 6, \$126.50, and interest for 10 days at 6 per cent, \$0.21.
18. Sold J. R. Johnson, on account, a bill of goods amounting to \$75.75, n/30.
Paid cash for office supplies, \$10.80.
19. Sold W. Cole, on account, merchandise, \$35.40, n/30.
20. Received cash from H. Peters, paying his account in full. Bought merchandise on account from C. L. Master Company, n/30, as shown by their invoice of Feb. 18, \$225.80. Paid the bookkeeper's weekly wage in cash.
22. Sold Ted Brown on his 30-day 6 per cent note dated today a bill of goods, \$150.50. Cole returned \$15 merchandise for credit, which was allowed.
24. Sold H. Peters merchandise, on account, \$153.55, n/30.
26. Paid cash, \$3.50 for telephone service for month of February.

Total and rule the columns in the journals except the general journal.

6. Enter the following transactions in the proper special journals:
19—

- Feb. 1. James Elliott entered the builder's supply business this date, investing \$20,000 cash; land worth \$5,000; and buildings valued at \$6,000.
2. Purchased carload cement from Duoversal Company, net 20 days, \$1,497.79.
 3. Sent check for \$212.21 covering freight on cement to P. & L. E. R. R. Company.
 4. Purchased a Mack truck, paying cash, \$2,420.
 6. Purchased carload each of sand, lime, crushed stone, and gravel from Allegheny Supply Company, net 30 days, \$5,471.23.
 8. Gave a check to Pittsburgh Press for \$25.52 for advertising.
 10. Cash sales for day, \$431.13.
 15. Sold McGinty Brothers, terms 30 days net, a bill of supplies, \$3,926.96.

20. Received credit from the Duoversal Company for twenty sacks of cement which was hardened beyond use. Credit memorandum was for \$50.05.
23. Sent check to Duoversal Company for amount due them.
26. Purchased ink, paper, and other office supplies from Jenks and Company, terms 30 days, amount \$40.14.
28. McGinty Brothers gave a 45-day, 6 per cent note dated Feb. 27, in payment of their purchase of Feb. 15.
29. Paid wages for month, \$420.02.

wed. 7/28
7. From the account balances listed below prepare the following statements:

1. Statement of income, profit and loss.
2. Statement of ownership.
3. Balance sheet.

Cash.....	\$ 7,000
Accounts Receivable.....	40,000
Inventory at Jan. 1, 19—.....	42,500
Delivery Equipment.....	6,000
Furniture and Fixtures.....	4,000
Accounts Payable.....	19,800
I. M. Wise, Capital, Jan. 1, 19—.....	70,000
I. M. Wise, Withdrawals.....	3,000
Sales.....	89,800
Purchases.....	60,200
Inventory at Dec. 31, 19—.....	34,420
Operating Expenses (total).....	16,900

8. You are engaged in the builder's supply business. Your accounting system has five books of original entry, namely, the cash receipts, cash disbursements, purchase, sales and general journals. Under the following three headings list the transactions which are given below:

1. Name of book in which transaction is recorded.
2. Name of account debited and the amount.
3. Name of account credited and the amount.

Transactions:

- Nov. 1. Sold Frank Bond materials on account, \$250, 1/10—n/30.
2. Cash sales for the day amounted to \$155.
 3. Purchased an office safe from the Safety Supply Company on account, \$425.
 4. Received a shipment of lime from the Lime Kiln Company, \$435, terms 2/10—n/30.
 5. Frank Bond returned materials having an invoice price of \$50, which he purchased on Nov. 1.
 6. You discounted at the bank one of your own notes for \$1,500. Discount rate 6 per cent for 30 days amounted to \$7.50.
 10. Frank Bond paid the balance of his account.
 11. You purchased five cars of coal from the King Coal Company, invoice \$2,500, for which you gave your note at 6 per cent for \$1,500, a check for \$500, and the balance on 60-day open account.

9. Name the book of original entry, the amount and account debited, and the amount and account credited in each of the following transactions, which occurred in the business of Park R. Davis, an electrical dealer:

- May 1. Davis withdrew light bulbs for home use, the cost price of which was \$6.75.
3. Sold to B. R. Patterson on account, \$210.66, 1/10—n/30.
6. Gave \$5 to the Red Cross.
9. Bought 1,000 pounds copper wire from the McComb Electric Company on account, \$940, 2/10—n/30.
10. Patterson paid his account in full.
12. Gave cash in the amount of \$6.50 to a customer who returned some radio parts.
15. Cash sales for the week amounted to \$450.66.
19. Paid the McComb Electric Company one-half of their account by check, and gave a note for the balance.
25. Purchased an assortment of small tools on account from the Machinists Supply Company, \$469.
31. The New National Bank notified Davis that interest on his bank deposits for the month amounted to \$5.88.

Chapter V

NOTE.—Use any of the first six problems in Chapter IV as a basis for making postings from the journals to ledger accounts and for preparing trial balances.

1. Enter the following transactions in the proper books of original entry, make the postings to the ledger accounts, and prepare a trial balance.

- Jan. 1. D. T. Frazee opened a wholesale belting business, investing \$5,000 cash, which was deposited in the Buckeye Savings & Trust Company. He also turned over to the business a building appraised at \$20,500, and land valued at \$10,000.
2. Purchased a delivery truck, costing \$600, from the Penn Sales Company for which 12 notes of equal amount were given in payment, the first due 30 days after date, and the others at intervals of 30 days thereafter.
4. Bought a typewriter and a desk for use in the office, giving a check for \$225.
6. Received an invoice and the goods covered by same from the American Belting Company, on account, \$5,644, terms 1/15—n/45.
8. Cash sales amounted to \$757.75. Sales on account, terms 1/10—n/30: Prairie Machine Company, \$260; Crescent Machine Company, \$399.75; Smith & Bond, \$480.
10. Purchased belting from the Central Belting Company on account, \$465.90, terms 1/10—n/30.
15. Sales for cash, \$276.90. Sales on account, terms 2/10—n/30: Harris & Davis, \$375.00; Empire Machine Works, \$609.90.
16. A. C. Farrell bought a bill of goods amounting to \$315, giving his 6 per cent note for 60 days which was made this date.

18. The Prairie Machine Company gave their 30-day non-interest-bearing note dated today in payment of their account, the discount on the invoice not being allowed.
20. Paid the invoice of the American Belting Company.
24. Harris & Davis sent their check for goods sold to them on the fifteenth.
26. Farrell sent his check in payment of his note dated Jan. 16, together with the interest.
31. Paid salaries and wages for the month by check, \$325.

2. Prepare a trial balance from the following ledger account balances:

Sales.....	\$52,477	<i>cr</i>
Land.....	5,000	
Inventory, Apr. 30, 19—.....	11,676	
Wages and Salaries.....	1,800	
Purchase Returns and Allowances.....	437	
Sales Returns and Allowances.....	1,435	
Buildings.....	1,750	
Automobile Trucks.....	1,950	
Notes Receivable.....	4,650	
Delivery Expense.....	850	
Office Expense.....	117	
Interest Earned.....	47	
Purchases.....	40,150	
Freight In.....	1,000	
Taxes.....	158	
Cash.....	1,915	
Notes Payable.....	5,250	<i>cr</i>
B. A. Higgins, Capital.....	14,093	<i>cr</i>
Insurance.....	75	
Repairs to Building.....	150	
Accounts Payable.....	8,750	<i>cr</i>
Accounts Receivable.....	6,862	<i>dr</i>
B. A. Higgins, Personal.....	750	<i>debit to</i>
Advertising.....	1,000	
Rentals Received.....	234	

3. A review of the ledger of Martin Warner at Dec. 31, 19—, revealed the following account balances from which is to be prepared a trial balance:

Cash.....	\$ 5,414.58
Accounts Receivable.....	22,297.51
Notes Receivable.....	525.50
Inventory, July 1, 19—.....	27,893.32
Securities Owned.....	557.50
Prepaid Insurance.....	97.49
Automobile Equipment.....	8,985.17
Office Equipment.....	5,287.73
Store Equipment.....	5,928.94
Accounts Payable.....	8,366.29
Notes Payable.....	1,541.45
Mortgage Payable.....	14,400.00

Martin Warner, Drawings.....	3,958.74
Martin Warner, Capital.....	67,420.05
Purchases.....	159,700.42
Purchase Returns and Allowances.....	3,581.04
Freight and Express In.....	2,649.30
Salesmen's Salaries and Commissions.....	24,066.25
Advertising.....	5,402.42
Automobile Expense.....	7,296.20
Freight Out.....	923.11
Store Expense and Supplies.....	569.44
Rent.....	9,000.00
Light, Heat, and Power.....	1,010.14
Telephone and Telegraph.....	980.89
Postage.....	916.56
Taxes.....	431.95
Bonus to Employees.....	3,835.61
Insurance.....	1,313.48
Donations.....	680.00
Sales.....	229,643.24
Sales Returns and Allowances.....	9,086.08
Rentals Earned.....	4,290.00
Commissions Earned.....	732.93
Interest Received.....	388.57
Salesmen's Traveling Expenses.....	588.25
Warehouse Expense.....	2,930.33
Office Salaries.....	6,481.96
Office Expense and Supplies.....	2,244.21
Legal and Professional Expense.....	7,530.94
Repairs to Equipment.....	595.55
Dues and Subscriptions.....	320.00
Interest Expense.....	864.00

4. The following are the balances as shown in the general ledger of D. T. Decker, at the close of business, June 30, 19—. Prepare a trial balance.

Land.....	\$ 10,000.00	P
Building.....	20,000.00	D
Inventory, Jan. 1, 19—.....	45,355.63	P
Purchase Returns and Allowances.....	1,092.47	C
Fuel.....	4,308.63	D
Advertising.....	3,675.59	D
Notes Receivable.....	5,000.00	D
Purchases.....	74,665.60	D
Wages, Warehousemen.....	3,085.67	D
Cash.....	8,531.22	D
Machinery.....	5,000.00	D
Salesmen's Salaries.....	9,050.00	P
Interest on Notes Receivable.....	86.28	C
Rent for Branch Stores.....	5,300.00	C
Accounts Receivable.....	36,567.76	C
Insurance.....	669.36	D

Notes Payable.....	5,000.00 <i>c</i>
Sales.....	121,905.35 <i>c</i>
Office Salaries.....	4,095.85 <i>c</i>
D. T. Decker, Capital.....	76,322.16 <i>c</i>
Commissions Earned.....	2,800.00 <i>c</i>
Sales Returns and Allowances.....	6,462.66 <i>c</i>
Interest on Notes Payable.....	825.40 <i>c</i>
Salesmen's Traveling Expenses.....	4,277.25 <i>c</i>
Stationery and Office Supplies.....	223.12 <i>c</i>
Freight and Cartage In.....	2,626.42 <i>c</i>
Accounts Payable.....	30,574.61 <i>c</i>
Taxes.....	426.25 <i>c</i>
Commissions Paid.....	1,041.57 <i>c</i>
Freight Out.....	902.02 <i>c</i>
Delivery Expense.....	1,250.50 <i>c</i>
Electric Power.....	1,186.70 <i>c</i>
D. T. Decker, Personal (Dr.).....	3,692.45 <i>c</i>
Delivery Equipment.....	3,000.00 <i>c</i>
Tools.....	1,561.22 <i>c</i>
Mortgage Payable.....	25,000.00 <i>c</i>
5. From the following account balances, prepare a trial balance:	
R. B. Cowin, Capital.....	\$37,500
Cash.....	3,433
Sales Returns and Allowances.....	3,000
Purchases.....	33,000
Interest Earned.....	50
Inventory.....	5,650
Insurance Paid.....	1,500
Office Equipment.....	3,930
Notes Payable.....	20,850
Interest and Discount Expense.....	375
Accounts Receivable.....	21,970
Wages and Salaries.....	8,750
Accounts Payable.....	6,736
Office Expenses.....	400
Buildings.....	44,400
Notes Receivable Discounted.....	3,000
Commissions Earned.....	1,900
Sales Discount.....	1,650
R. B. Cowin, Personal (debit).....	3,740
Sales.....	83,934
Office Equipment.....	3,930
Purchase Returns and Allowances.....	1,100
Store Expense.....	465
Land.....	6,400
Advertising.....	2,570
Trade Acceptances Receivable.....	3,650
Purchase Discount.....	400
Miscellaneous Sales.....	450
Notes Receivable.....	7,107

6. a. Prepare a trial balance from the following accounts in which is recorded a summary of the transactions for the fiscal year ended Dec. 31, 19—.

b. From the trial balance, prepare the following statements:

1. Statement of income, profit and loss.
2. Statement of ownership.
3. Balance sheet.

The value of goods on hand at Dec. 31, 19—, was \$6,542.61. In preparing the statements, keep in mind the proper form, heading, and grouping of items in each.

Cash		Securities (Liberty Bonds)		Land	
\$ 2,197.36	\$ 5,609.00	\$10,000.00	\$5,000.00	\$15,000.50	
25,416.21	1,500.00				
21,254.08	160.60				
5,000.00	7,122.00	Kokomo Canning Company			
350.00	450.10				
1,500.00	515.00				
1,200.00	14,645.11	\$7,122.00	\$ 869.19	V. C. Bennett, Capital	
18,425.50	847.70	221.90	4,823.00		
	18,066.93		6,556.87		
					\$37,543.89
N. A. Quinn		Notes Receivable		Building	
\$ 1,655.72	\$18,425.50	\$2,500.00	\$1,500.00	\$10,060.00	
16,464.17	675.44				
15,995.59					
Purchases		Rentals Received		Sales	
\$44,727.72			\$1,200.00		\$20,765.90
					16,484.17
					41,879.98
Prepaid Insurance		E. C. Normile		Mortgage Payable	
\$160.60		\$18,066.93	\$13,030.03		\$13,000.00
			9,671.92		
			5,036.90		
Inventory		Purchase Returns and Allowances		Legal Fees	
\$10,000.00			\$221.90	\$515.00	
V. C. Bennett Drawings		Taxes		Wages	
\$1,500.00		\$450.10		\$14,645.11	
Sales Returns and Allowances		Interest Earned on Securities		Heat, Light and Power	
\$675.44			\$350.00	\$847.70	\$0.50

Chapter VI

1. From the following ledger account balances prepare a work sheet at Dec. 31, 19—.

Cash.....	\$ 5,014.23	Sales.....	185,000.00
Inventory, July 1,		Accounts Receivable	26,471.10
19—.....	14,293.78	Interest Earned.....	9.28
Mortgage Payable	10,000.00	Store Expense.....	521.00
C. Porter, Capital	27,503.68	Purchase Allowances	416.70
C. Porter, With-		Office Equipment...	890.00
drawals.....	176.29	Accounts Payable...	5,401.22
Rent Expense.....	2,400.00	Office Expense.....	925.56
Notes Receivable..	10,928.00	Store Fixtures.....	544.20
Salaries and Wages	27,418.25	Parcel Post Out.....	96.20
Light and Power....	426.15	Purchases.....	137,842.10
Notes Payable.....	1,220.00	Sales Returned....	1,591.82
Interest Expense....	12.20		

The goods on hand at Dec. 31, 19—, amounted to \$12,641.09.

2. Prepare a work sheet from the following ledger account balances taken from the ledger of G. C. Switzer at Dec. 31, 19—, at which date the inventory of merchandise was placed at \$12,966.82.

Cash.....	\$ 1,956.22	Purchase Allow-	
Notes Receivable...	950.00	ances.....	2,999.19
Accounts Receivable	21,720.72	Freight In.....	1,476.12
Inventory, Jan. 1...	16,841.09	Salaries.....	25,947.19
Delivery Equipment	2,520.00	Traveling Expense..	3,665.83
Furniture and Fix-		Rent.....	3,600.00
tures.....	1,897.43	Delivery Repairs and	
Notes Payable.....	1,672.14	Supplies.....	1,614.96
Accounts Payable...	4,591.19	Office Supplies.....	976.25
G. C. Switzer, Cap-		Donations.....	115.00
ital.....	31,431.03	Legal Fees.....	500.00
G. C. Switzer, Per-		Interest Earned.....	25.42
sonal (Dr.).....	659.42	Freight and Express	
Sales.....	173,468.92	Out.....	459.27
Sales Allowances....	6,451.15	Interest Expense....	36.58
Purchases.....	122,800.66		

3. Prepare a work sheet from the following trial balance:

Cash.....	\$ 1,000	
Notes Receivable.....	500	
Accounts Receivable.....	17,500	
Inventory, July, 1, 19—.....	5,750	
Furniture and Fixtures.....	1,250	
Accounts Payable.....		\$ 3,750
G. D. Whitney, Capital.....		21,450
G. D. Whitney, Personal.....	1,000	
Sales.....		41,900
Rentals Received.....		2,100
Commissions Earned.....		1,250
Purchases.....	33,750	
Wages.....	5,850	
Rent.....	2,400	
Advertising.....	700	
Office Supplies and Expense.....	500	
Prepaid Insurance.....	250	
	<u>\$70,450</u>	<u>\$70,450</u>

The closing inventory at Dec. 31, 19—, was valued at \$3,450.

From the completed work sheet prepare the following statements:

- a. Statement of income, profit and loss.
- b. Statement of ownership.
- c. Balance sheet.

4. Prepare a work sheet from the following trial balance.

Inventory, Jan. 1, 19—.....	\$10,500.00	
Cash.....	4,025.91	
Accounts Receivable.....	12,037.13	
Delivery Truck.....	2,525.00	
Store Fixtures.....	1,800.00	
Office Equipment.....	641.87	
Accounts Payable.....		\$ 5,061.12
Mortgage Payable.....		5,000.00
Notes Payable.....		3,400.00
J. P. Conley, Capital.....		16,760.00
Notes Receivable.....	5,500.00	
Delivery Truck Expense.....	30.00	
Sales Allowances.....	44.12	
Wages.....	112.00	
Purchase Returns.....		90.68
Rent.....	125.00	
Sales Discount.....	30.71	
Purchase Discount.....		21.89
Purchases.....	4,701.80	
Sales.....		11,718.15
Miscellaneous Sales.....		21.70
	<u>\$42,073.54</u>	<u>\$42,073.54</u>

The inventory at Jan. 31, 19—, was valued at \$4,655.

From the completed work sheet prepare the following financial statements:

- a. Statement of income, profit and loss.
- b. Statement of ownership.
- c. Balance sheet.

5. After completing a work sheet from the account balances listed below, prepare a profit and loss statement, a statement of ownership, and a balance sheet:

Cash.....	\$ 21,750	
Purchase Discount.....		\$ 1,642
Salaries.....	27,956	
Delivery Equipment.....	4,500	
C. W. Bowser, Personal.....		5,000
Postage.....	1,023	
Purchase Returns and Allowances.....		469
Telephone and Telegraph.....	952	
Freight In.....	2,340	
Sales.....		226,573
Land.....	30,500	
Buildings.....	79,840	
Rentals Earned.....		600
Advertising.....	8,640	
Inventory, Jan. 1, 19—.....	29,283	
L. L. Phelps, Personal.....	10,000	
Insurance.....	1,290	
Notes Payable.....		2,500
Store and Office Equipment.....	5,000	
Purchases.....	142,916	
Sales Returns and Allowances.....	1,207	
Accounts Payable.....		18,000
Traveling Expenses.....	6,029	
Freight Out.....	1,892	
Accounts Receivable.....	49,666	
C. W. Bowser, Capital.....		85,000
L. L. Phelps, Capital.....		85,000
	<u>\$424,784</u>	<u>\$424,784</u>

The inventory at Dec. 31, 19— was valued at \$23,492.00.

According to the partnership agreement, profits and losses were divided equally.

6. Prepare the financial statements from the work sheet completed from the following account balances:

Cash.....	\$ 3,765	
D. T. Frazee.....	2,928	
Notes Receivable.....	950	
Inventory, Jan. 1, 19—.....	15,606	
Store Equipment.....	1,825	
Office Furniture and Fixtures.....	910	
Delivery Equipment.....	2,450	
W. T. Cohee.....		\$ 3,618
Chas. Newhouse.....		2,105
Notes Payable.....		1,000
V. C. Coble, Capital.....		20,700
V. C. Coble, Drawings.....	2,063	
Sales.....		91,510
Sales Returns and Allowances.....	2,466	
Purchases.....	55,719	
Purchase Returns and Allowances.....		447
Freight In.....	2,501	
Advertising.....	967	
Rent.....	2,400	
Salesmen's Salaries.....	14,869	
Traveling Expense.....	3,108	
Postage.....	664	
Office Supplies.....	710	
Delivery Expense.....	2,450	
Telephone and Telegraph.....	858	
Commissions Earned.....		865
Office Salaries.....	3,036	
	<u>\$120,245</u>	<u>\$120,245</u>

Inventory at June 30, 19—, was valued at \$16,742.

Chapter VII

1. From the following trial balance and other adjustments at June 30, 19—, prepare:

- a. A work sheet.
- b. Adjusting journal entries.
- c. Financial statements.

Cash.....	\$	910.15	
Notes Receivable.....		3,000.00	
Accounts Receivable.....		5,003.67	
Inventory, Jan. 1, 19—.....		7,500.66	
Store Furniture and Fixtures.....		3,750.00	
Office Equipment.....		1,250.00	
Delivery Equipment.....		2,500.00	
Notes Payable.....			\$ 1,250.00
Accounts Payable.....			2,598.63
Notes Receivable Discounted.....			2,250.00
Purchases.....	33,750.75		
Sales.....			42,475.08
Commissions Earned.....			1,250.15
Rentals Received.....			286.00
Interest Income.....			25.75
Taxes.....		119.55	
Wages..		6,250.55	
Rent.....		2,050.00	
Advertising.....		3,795.53	
Light and Power.....		504.66	
Interest and Discount.....		240.18	
Insurance.....		250.00	
C. R. Kehoe, Personal.....		450.00	
C. R. Kehoe, Capital.....			21,190.09
	<u>\$71,325.70</u>		<u>\$71,325.70</u>

Inventory.....	\$7,774.47
Advertising literature unused.....	459.62
Wages accrued.....	166.65
Interest accrued on notes receivable.....	4.50
Rentals received applicable to the period subsequent to June 30, 19—.....	28.60
Insurance unexpired.....	125.00

2. The trial balance as taken from the ledger of T. D. Collins is shown below:

Cash.....	\$ 7,250	
Notes Payable.....		\$ 1,500
Purchases.....	27,461	
Purchase Returns and Allowances.....		411
Wages.....	6,525	
Bank Discount.....	21	
Sales.....		40,350
Donations.....	60	
Sales Discount.....	345	
Notes Receivable.....	1,400	
Office Equipment and Fixtures.....	3,020	
Commissions Earned.....		350
Land.....	8,000	
Building.....	21,000	
Interest Received.....		49
Freight In.....	290	
Freight Out.....	165	
T. D. Collins, Capital.....		33,000
T. D. Collins, Withdrawals.....	1,351	
Delivery Expense.....	1,189	
Accounts Payable.....		3,500
Sales Returns and Allowances.....	350	
Repairs to Building.....	733	
	<u>\$79,160</u>	<u>\$79,160</u>

The adjustments to be taken into consideration at the close of the fiscal period, June 30, 19—, were as follows:

Inventory.....	\$4,792.80
Commissions earned but not received.....	19.50
Prepaid bank discount.....	5.40
Unpaid wages.....	172.44
Interest received but unearned.....	6.60
Unused automobile tires included in delivery expense.....	88.00

Prepare:

- a. Work sheet.
- b. Adjusting journal entries.
- c. Financial statements.

3. Prepare a work sheet from the following ledger account balances, and other data disclosed at Dec. 31, 19—. Also prepare adjusting journal entries:

Cash.....	\$ 9,000	
Inventory, Jan. 1, 19—.....	7,500	
Mortgage Payable.....		\$ 45,000
Sales.....		232,460
Land.....	10,550	
Salaries.....	16,950	
Delivery Expense.....	3,100	
Stock of the Lake Erie Dock Company.....	10,000	
Building.....	43,000	
Sales Returns.....	4,450	
Interest Income.....		150
Notes Receivable.....	15,000	
Store Supplies.....	3,400	
Prepaid Fire Insurance.....	600	
W. H. Welch, Capital.....		40,200
Cash Dividends, Lake Erie Dock Company.....		300
Furniture and Fixtures.....	2,250	
Accounts Payable.....		24,860
Rent Paid.....	600	
Purchases.....	204,960	
Accounts Receivable.....	11,610	
	<u>\$342,970</u>	<u>\$342,970</u>
Interest due on notes receivable.....	\$ 6.75	
Fire insurance unexpired.....	400.00	
Store supplies on hand.....	265.19	
Rent due.....	50.00	
Compensation insurance estimated.....	364.78	
Interest due on mortgage.....	3,600.00	
Inventory.....	8,472.63	

4. Prepare a work sheet from the following information:

Cash.....	\$ 3,000	
Accounts Receivable.....	20,000	
Inventory.....	15,000	
Equipment.....	4,000	
Accounts Payable.....		\$ 7,000
C. M. Pinks, Capital.....		29,538
C. M. Pinks, Personal.....	450	
Sales.....		186,000
Purchases.....	151,000	
Prepaid Insurance.....	500	
Wages.....	18,600	
Commissions Earned.....		470
Rental Income.....		192
Rent.....	6,000	
Office Expense.....	4,650	
	<u>\$223,200</u>	<u>\$223,200</u>

The following adjustments are to be considered at Dec. 31, 19—:

Taxes accrued.....	\$ 138
Inventory.....	13,500
Unexpired insurance.....	250
Wages due.....	500
Commissions due.....	110
Rental income prepaid.....	15

From the completed work sheet prepare the financial statements, and adjusting entries.

5. In preparing the financial statements of the Eagle Eye and Hook Company, at the end of the fiscal year, the bookkeeper omitted the following items in arriving at a net profit of \$3,725.10.

Prepaid rental income.....	\$100
Accrued interest income.....	50
Prepaid insurance.....	150
Accrued wages payable.....	370

a. What should have been the net profit?

b. What would be the necessary entry or entries to correct, if the above information came to light 10 days after the books were closed?

6. At the end of the fiscal year, the following amounts appeared in the trial balance of the Conneaut Lake Transit Company:

Wages and Salaries.....	\$22,190.66
Rental Income.....	264.00
Prepaid Insurance.....	450.50
Interest on Bank Deposit.....	37.93
Fuel.....	8,465.19

The following adjustments were required in order to reflect accurate operating results:

Wages due but unpaid.....	\$ 369.72
Rental income unearned.....	16.00
Insurance unexpired.....	87.50
Interest due from bank but not received.....	7.93
Taxes due the state estimated to be.....	1,672.98
Fuel on hand.....	655.17

- Make the adjusting entry for each of the above adjustments.
- What items and amounts will appear in the statement of income, profit and loss? State which items are expenses and which are incomes.
- What items and amounts will appear in the balance sheet, and under what divisions?

Chapter VIII

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1. On July 1, 1925, the Hookum Company purchased four stamping machines at a cost of \$1,200 each. Freight paid on the machines amounted to \$256, and cost of erection was \$320. The estimated useful life placed on the machines was four years, each having a \$50 residual value. The company closed its books yearly at Dec. 31 and depreciated its equipment upon the straight-line basis.

At Jan. 1, 1928, one of the machines was sold for \$575.

At Jan. 1, 1929, another machine was sold for \$125.

At July 1, 1929, a third machine was traded in on a new machine having a purchase price of \$1,550, an allowance of \$50 being received on the old machine.

Prepare:

- Journal entries (general journal form) to record the above transactions.
- Post all entries to the Machinery account and the Reserve account, showing the balances at July 1, 1929.

2. The Peking Pit Gravel Company, a corporation organized to issue 2,500 shares each of common and preferred stock, with a par value of \$100, disposed of the entire authorized issue as follows: 1,000 shares of each subscribed for at par and paid in cash; and the balance issued for the sand and gravel site, paid in full. \$60,000 cash was paid for new equipment purchased. It is estimated that the pit will produce 150,000 tons. At the end of the first fiscal period, June 30, 19—, the books reveal the following facts:

Sales for cash 17,500 tons.....	\$87,500
Excavation labor.....	6,000
Miscellaneous excavation expenses.....	6,500
Depreciation on equipment.....	6,000
Selling expenses.....	3,500
General administrative expenses.....	3,800

All expenses were paid by cash. There was no inventory at June 30, 19—.

- a. What was the amount of the depletion charge per ton?
- b. Prepare entries for the above transactions.
- c. If an 8 per cent dividend had been declared and paid on the preferred stock, what would have been the entry?
- d. Prepare a profit and loss statement and a balance sheet after the dividend was declared.

3. An automobile truck originally costing \$1,650 was destroyed by fire, and was replaced with one costing \$2,300, for which cash was paid, there being no insurance on the old truck. How should the transaction be recorded:

- a. When no provision for depreciation had been made?
- b. When the depreciation charges were offset by credits to a reserve for depreciation on the auto truck account, the amount in the reserve to date being \$1,237.50?

4. A company engaged in manufacturing on a water front in a small village has built a private dock of very substantial construction, the life of which is estimated by engineers to be measurable in centuries.

In determining the question of depreciation in relation to this dock (1) state what arguments should be considered in favor of charging depreciation and what data should be taken into consideration in arriving at a rate of depreciation, and (2) what arguments should be considered in favor of providing no depreciation on the dock.

Pennsylvania State C. P. A. Examination, November, 1914

5. A machine was constructed and charged to a Machinery account 9 year ago, together with other machines made at the same time, and a separate cost of each unit of machinery was not kept. According to regular practice, still in force, a credit was set up, in a Reserve account, for depreciation of machinery at the rate of 10 per cent on the total Machinery account. At the end of 9 years, this machine was sold for \$1,000 and you can secure no more accurate information as to cost than the engineer's opinion that the item sold must have cost to construct somewhere between \$10,000 and \$15,000. A new machine was purchased for \$15,000 to replace the old one sold. What entries should appear on the books to record the sale of the old machine and purchase of the new? A. I. A. 1925.

6. The Nixon Novelty purchased ten like machines at a cost of \$1,000 each. Each machine was estimated to have a life of 10 years, and a scrap value of \$25. Show the entry to record the depreciation at the end of the first year, considering the straight line method used.

At the end of the eighth year, five of the machines were sold for \$275 each, and were replaced by five new ones costing \$1,350 each.

Prepare the entries for the disposal of the old machines and purchase of the new machines.

7. At Jan. 1, 19—, a company purchased six automobile trucks paying \$1,850 for each, and 1 year later purchased four additional trucks at a cost of \$2,000 each. The trucks were depreciated by the straight-line method on the basis of an estimated useful life of 4 years.

At Dec. 31, 19—, 3 years after their purchase, the first six trucks were traded in for six new cars costing \$1,950 each. An allowance of \$400 was made on each of the old trucks. The accumulated depreciation for the three years was credited to a reserve account.

Prepare the journal entries necessary to record the transactions at Dec. 31, 19—, when the trade-in was made.

8. The Melwood Manufacturing Company has the following fixed assets in their plant. Compute the composite life of the plant from the information given.

Assets	Cost	Estimated life, years	Scrap value
Machinery.	\$200,000	15	\$4,000
Molds and Dies.....	6,850	2	50
Buildings.....	156,960	40	1,000
Boiler House Equipment.....	112,740	10	1,500

9. The Toledo Tinware Corporation purchased ten stamping machines at a cost of \$3,748.10 each, when in position ready for operation. The plant engineers estimated that each machine could be used 17,528 working hours. The production record at the end of the first year was as follows:

Machine Number	Hours
1	2,504
2	2,504
3	2,410
4	2,462
5	2,043
6	2,362
7	2,400
8	2,662
9	2,665
10	2,783

Compute the depreciation charge for the first year.

10. An automobile truck costing \$897.50, on Jan. 1, 1926, had been depreciated at the rate of 25 per cent per annum on cost, the accumulated depreciation being shown in a reserve account.

What entry should be made if the truck was exchanged for a new truck costing \$775 exactly $3\frac{1}{2}$ years after the purchase of the old truck? An allowance of \$50 was made on the old truck to apply against the purchase price of the new truck, the balance of which was paid by cash.

11. A machine was purchased Jan. 1, 19—, costing completely installed, \$5,647.09. It was estimated to have a useful life of 36,500 working hours.

Scrap value was estimated at \$350. During the first year the machine was operated 4,000 hours. Using the working-hour basis as the method for ascertaining the depreciation charge, what would be the entry at the close of the first year?

12. What procedure would be taken to determine the depreciation rate on a second-hand brick building for which a \$5,000 price was paid? At the date purchased the building was 20 years old, and had originally cost \$6,500.

13. A machine was purchased 5 years ago at a cost of \$42,500. At the time of purchase it was estimated to have a useful life of 12 years and was depreciated in accordance by the straight-line method. At the end of the fifth year it was found that the above machine would have to be scrapped and replaced by a more modern type of equipment in order to keep pace with competitors.

The new machine cost \$81,000 installed. What disposition would be made of the undepreciated cost of the first machine when it was scrapped, considering the scrap value to be \$400?

14. Prepare a work sheet and adjusting entries from the following information:

Cash.....	\$ 3,354	
Inventory, Jan. 1, 19—.....	8,460	
Sales.....		\$ 90,420
Land.....	8,000	
Buildings.....	12,500	
Salaries.....	8,890	
Delivery Expense.....	795	
Investment—Alton Glass Company Bonds.....	7,935	
Interest on Bonds.....		320
Sales Returns.....	580	
Interest Income.....		120
Notes Receivable.....	3,500	
Reserve for Depreciation on Building.....		3,000
Insurance Prepaid.....	900	
H. M. Mattix, Capital.....		42,740
Furniture and Fixtures.....	4,238	
Accounts Payable.....		3,000
Rent Paid for Warehouse.....	360	
Purchases.....	72,588	
Accounts Receivable.....	5,500	
Delivery Equipment.....	2,500	
Reserve for Depreciation on Furniture and Fixtures.....		500
	<u>\$140,100</u>	<u>\$140,100</u>

Inventory.....	\$9,672.10
Interest on bonds accrued.....	160.00
Insurance unexpired.....	600.00
Depreciation on building $2\frac{1}{2}$ per cent of cost.	
Depreciation on delivery equipment 25 per cent of cost.	
Depreciation on furniture and fixtures $12\frac{1}{2}$ per cent of cost.	

15. From the following trial balance and adjusting data, prepare:

- a. A work sheet.
- b. Adjusting entries.
- c. Statement of income, profit and loss.
- d. Statement of ownership.
- e. Balance sheet.

Cash.....	\$ 3,500	
Accounts Receivable.....	20,300	
Notes Receivable.....	7,500	
Inventory, Jan. 1, 19—.....	8,000	
Insurance.....	500	
Furniture and Fixtures.....	3,000	
Notes Receivable Discounted.....		\$ 2,050
Accounts Payable.....		3,000
Reserve for Depreciation Furniture and Fixtures.....		800
Mortgage Payable.....		10,000
T. D. Brown, Capital.....		30,055
Sales.....		81,000
Purchases.....	68,500	
Wages.....	12,250	
Rent.....	3,150	
Office Supplies and Expenses.....	900	
Interest on Mortgage.....	300	
Prepaid Rentals Received.....		400
Commissions Earned.....		595
	<u>\$127,900</u>	<u>\$127,900</u>

Inventory of merchandise on hand June 30, 19—	\$6,540
Commissions earned but not received.....	65
Insurance unexpired.....	250
Wages due but unpaid.....	375
Rentals received but unearned.....	50
Depreciation on furniture and fixtures, 10 per cent of cost.	

Chapter IX

1. Classify the following reserve accounts by placing them under the proper heading and in the correct position on a balance sheet:

- Reserve for State Mercantile Taxes
- Reserve for Strike Damage
- Reserve for Obsolescence
- Reserve for Increase in Land Value
- Reserve for Plant Extension and Betterments
- Reserve for Sandstone Removal
- Reserve for Doubtful Accounts
- Reserve for Repairs
- Reserve for Depreciation on Buildings
- Reserve for Flood Loss
- Reserve for Bond Redemption

Reserve for Compensation Insurance
 Reserve for Guarantees on Machines Sold
 Reserve for Damage Suit Pending
 Reserve for Working Capital
 Reserve for Federal Income Taxes

2. The Conkel Concrete Company manufactures cement blocks, ready-mixed concrete and other cement products. From Mar. 1 to Dec. 1, their equipment is in constant use, and only the most urgent repairs are made. Major repairs and overhauling are deferred until the slack season. In order to equalize the repair cost, they set up a reserve equal to 1 per cent of the cost of production each month. Monthly production costs are as follows for the year 19—:

January.....	\$ 5,640.77	July.....	\$12,486.51
February.....	4,923.50	August.....	12,002.11
March.....	6,255.20	September.....	11,466.37
April.....	10,972.46	October.....	10,984.12
May.....	12,647.72	November.....	10,098.43
June.....	13,982.10	December.....	8,462.15

During the same year, repairs cost the following amounts:

January.....	\$279.80	July.....	\$ 7.92
February.....	198.56	August.....	10.00
March.....	67.20	September.....	4.55
April.....	14.15	October.....	40.77
May.....	20.91	November.....	190.00
June.....	25.16	December.....	310.18

- Prepare summary entries to record the above facts.
- In what statement and under what heading would the balance in the reserve account be shown at the end of each month?
- What will be the disposition of the balance in the Repairs account at the end of the fiscal year?

3. The Standard Electric Corporation authorized the Industrial Insurance and Casualty Company to carry their employees' compensation insurance. The terms of the policy were \$100 initial payment at Jan. 1, and the final payment to be based on an audit of the payroll for the year ended Dec. 31, at rates estimated as shown below for the different classes of employees. The initial payment was made Jan. 10, 19—, in the present year. The corporation prepares monthly profit and loss statements. The monthly payroll distribution and estimated rate for each \$100 paid the various groups were as follows:

Month	Machine tenders (\$1.25)	Laborers, sweepers and cleaners (\$0.57)	Testers (\$1.95)	Salesmen (\$0.47)	Office employees (\$0.10)
January.....	\$3,594.26	\$695.10	\$556.47	\$ 856.20	\$455.00
February.....	2,910.77	510.17	594.28	910.00	455.00
March.....	3,164.02	525.92	658.11	990.66	440.00
April.....	3,357.17	550.55	641.20	1,047.10	455.00
May.....	3,794.65	594.20	666.75	1,050.50	455.00
June.....	4,251.10	651.12	702.12	1,187.77	475.00
July.....	4,171.75	692.53	685.52	1,229.90	475.00
August.....	4,055.98	682.10	693.52	1,314.72	475.00
September.....	3,996.16	681.84	783.50	1,456.10	475.00
October.....	4,347.55	699.98	777.28	1,445.54	475.00
November.....	4,964.72	718.66	810.14	1,392.47	470.00
December.....	4,546.47	701.47	755.65	1,216.55	450.00

Prepare summary entry or entries for the year to show the compensation insurance expense, and the payment of the advance premium of \$100.

When the above payroll was audited, the Insurance Company rendered the following bill at May 15, 19— of the following year.

Machine tenders.....	\$47,154.60 @	\$1.33	\$627.16
Laborers.....	7,703.64 @	0.54	41.60
Testers.....	8,324.54 @	1.87	155.67
Salesmen.....	14,097.51 @	0.40	56.39
Office.....	5,555.00 @	0.105	5.83

Prepare the entry to record the above bill received.

What was the balance in the Reserve account after the final bill was presented, and what disposition should be made of the balance?

4. A building was constructed and completed Jan. 2, 1910, at a cost of \$96,000. It was depreciated at a rate of 3 per cent per annum. An appraisal was made on Dec. 31, 1927, which disclosed that it had a value of \$52,500. The management wanted the difference between appraisal value and the book value to be shown in the accounts.

a. Show the necessary entry or entries to reflect this condition on the books of account.

b. What entries would be made if the building sold for \$60,000 at Dec. 31, 1928?

5. The board of directors of the Seamless Pipe Corporation passed a resolution on Oct. 17, 19— to increase the capacity of their plant by building an addition to the plant building estimated to cost \$175,000. The resolution specified that the erection should be financed from undistributed profits.

Actual work on the building began Dec. 1 of the same year. At the end of this month an expenditure of \$18,000 had been made for excavation and foundation work.

During the following year the job was completed at a total cost of \$172,566.12.

Show all entries necessary during the first year, as well as the manner in which the items would appear in the balance sheet.

Make the required entries during the year in which the building was completed.

6. At Dec. 31, 1929, the following adjusting entry was made on the books of the Better Products Company:

Bad Debts.....	\$850.77	
Reserve for Doubtful Accounts.....		\$850.77
To provide for estimated loss on customers' accounts applicable to the year 1929, being 1 per cent of the outstanding accounts receivable at Dec. 31, 1929.		

During 1930, customers' accounts amounting to \$741.92, arising from sales made in 1929, proved to be uncollectible. Also customers' accounts amounting to \$165.47, arising from sales made in 1930, were found to be uncollectible before Dec. 31, 1930. Prepare all entries necessary for transactions mentioned above during the year 1930. What balance should appear in the account, Reserve for Doubtful Accounts, prior to making the adjusting entry for doubtful accounts at Dec. 31, 1930? What disposition should be made of this balance?

7. On Dec. 31, 1928, when the books of the Star Packing Company were closed, a reserve for doubtful accounts was created for \$3,500 based on a percentage of outstanding accounts receivable. Included in the accounts receivable, at Dec. 31, 1928, was an account with G. A. Craw showing a balance of \$950 for goods sold him Dec. 17, 1928.

On Jan. 10, 1929, merchandise to the value of \$450 was also sold to Craw. Craw became bankrupt and in the settlement of his business only 40 cents on the dollar was paid to his creditors Sept. 10, 1929. Make the entry or entries on the books of the Star Packing Company at the time of the final and only payment on Sept. 10, 1929.

8. Show the entries necessary to create the following reserves, and also the entries required to remove the balance from the accounts:

- a. Reserve for Betterments.
- b. Reserve for Depreciation.
- c. Reserve for Repairs.
- d. Reserve for Appreciation.
- e. Reserve for Federal Income Taxes.

9. The directors of a corporation occupying a wharf property have incorporated in their minutes a resolution to increase on their books the value of their land and buildings by \$100,000, Surplus account to be credited. The explanation accompanying the resolution is that the property adjacent had recently been sold at about that proportionate advance. An entry in accordance with this resolution was placed on the books.

During the year a 6 per cent annual dividend was paid on the outstanding capital of \$1,500,000, and you find in your examination of the accounts at the end of the fiscal year that the Surplus account, which is the only

account on their books reflecting profit and loss, shows a credit balance of \$6,000, the books having been closed.

Discuss fully the propriety of the actions of the board of directors, including your reasons for any exceptions that you might take.

Pennsylvania State C. P. A. Examination, November, 1917

10. The Board of Directors of the Dymbright Corporation authorized the issue of \$1,000,000, 5 per cent, 30-year gold bonds. The bonds were sold for cash at 101. Provision was made in the bonds for the creation of a sinking fund at the end of each year, and also a sinking fund reserve.

The following is a partial table of accumulation for the sinking fund:

<u>End of Year</u>	<u>Sinking-fund Contribution</u>	<u>Interest Collected</u>
1	\$15,051.44	
2	15,051.44	\$ 752.57
3	15,051.44	1,542.77
4	15,051.44	2,372.48

Prepare:

- a. All entries for the first 2 years.
 - b. Entries to close all accounts affected by these transactions at the maturity of the bonds.
11. Prepare entries for the following transactions:
- a. The board of directors of the Auto Supply Corporation authorized a \$100,000 ten-year 5 per cent bond issue. The bonds were sold for cash at a 5 per cent discount.
 - b. At the end of the first year a sinking fund of \$7,950.46 was created, a reserve was provided, the bond interest was paid, and the bond discount was amortized.
 - c. At the end of the second year the interest earned amounted to \$397.52.
 - d. At the end of 10 years the bonds were cancelled by payment of the principal.

12. From the following trial balance and adjustments prepare:

- a. Adjusting entries.
- b. Statement of income, profit and loss.
- c. Statement of capital
- d. Balance sheet.

Cash.....	\$ 1,500	
Notes Receivable.....	500	
Accounts Receivable.....	10,000	
Inventory.....	12,000	
Land.....	5,000	
Building.....	10,000	
Accounts Payable.....		\$ 5,000
Reserve for Depreciation Building.....		900
Reserve for Doubtful Accounts.....	50	
A. R. Carson, Capital.....		40,140
A. R. Carson, Personal.....		1,000
Purchases.....	66,600	
Advertising.....	1,050	
Salaries.....	10,640	
Prepaid Rentals Received.....		300
Sales.....		70,000
	<u>\$117,340</u>	<u>\$117,340</u>

Complete the work sheet for the business of A. R. Carson after considering the following adjustments:

Depreciation on building, 3 per cent of cost.	
Prepaid advertising.....	\$ 450
Interest accrued on notes receivable.....	5
Rentals earned.....	275
Inventory.....	15,000
Salaries accrued.....	260
Charge off one-half of 1 per cent of sales as the estimated loss from doubtful accounts for the year.	
Accrued taxes.....	70

Chapter X

1. The following trial balance and adjustments were taken from the books of the Tri Rivers Packet Corporation at the close of the fiscal year, Dec. 31, 19—. Prepare the following financial statements paying particular attention to the proper position of the various items therein:

- a. Statement of income, profit and loss.
- b. Statement of surplus.
- c. Balance sheet.

Trial Balance, Dec. 31, 19—

Cash.....	\$ 15,096.25	
Notes Receivable.....	850.00	
Accounts Receivable.....	12,774.82	
Fuel.....	12,984.70	
Investment in Liberty Bonds.....	10,000.00	
Land.....	30,000.00	
Buildings.....	50,000.00	
Office Equipment.....	1,111.25	
Steamers.....	300,000.00	
Barges.....	200,000.00	
Docks and Wharf.....	55,000.00	
Wages, Steamer and Barge.....	23,472.19	
Wages, Dock and Wharf.....	14,655.12	
Repair Parts.....	4,856.72	
Miscellaneous Supplies.....	5,858.37	
Goodwill.....	22,500.00	
Real Estate Investment.....	16,410.20	
Prepaid Insurance.....	2,395.16	
Employees' Compensation Insurance....	1,159.27	
Boiler Inspection and Repairs.....	3,265.90	
Dock and Wharf Repairs.....	989.07	
Ship and Barge Repairs.....	11,594.20	
Building Repairs.....	355.80	
Bond Sinking Fund.....	54,078.33	
Advertising.....	137.09	
Taxes.....	1,291.80	
Office Supplies and Expense.....	1,364.20	
Office Salaries.....	3,520.10	
Officers' Salaries.....	12,000.00	
Reserve for Depreciation Buildings.....		\$ 15,000.00
Reserve for Depreciation Office Equip- ment.....		856.20
Reserve for Depreciation Steamers.....		150,000.00
Reserve for Depreciation Barges.....		70,921.67
Reserve for Depreciation Docks and Wharf.....		10,950.00
Reserve for Doubtful Accounts.....	15.65	
Reserve for Compensation Insurance....		1,109.27
Reserve for Boiler Repairs.....		1,642.20
Reserve for Flood Loss.....		25,000.00
Reserve for Working Capital.....		50,000.00
Reserve for Bond Sinking Fund.....		54,078.33
Bonds Payable.....		100,000.00
Accounts Payable.....		5,647.22
Unamortized Bond Discount.....	1,600.00	
Common Capital Stock.....		200,000.00
Surplus.....		26,410.20
Interest on Liberty Bonds.....		400.00
Steamer and Barge Earnings.....		157,321.10
	<u>\$869,336.19</u>	<u>\$869,336.19</u>

Interest accrued on Liberty Bonds.....	\$ 25.00
Interest earned on bond sinking fund.....	2,703.92
Bond discount applicable to the period.....	400.00
Interest accrued on bonds payable.....	5,000.00
Unexpired insurance.....	906.63

Increase the reserve for doubtful accounts in the amount of 1 per cent of the outstanding accounts receivable

Increase the reserves for depreciation as follows:

	<u>Per cent of cost</u>
Buildings.....	3
Office Equipment.....	10
Steamers.....	5
Barges.....	7½
Docks and Wharf.....	2
Inventory of Repair Parts.....	\$ 945.87
Inventory of Miscellaneous Supplies.....	1,090.19
Inventory of Fuel.....	2,018.50
Increase the Bond Sinking Fund by.....	7,950.46
Increase the Sinking Fund Reserve to.....	64,732.71
Increase the Reserve for Flood Loss to.....	30,000.00

Set up the liability for the payment of an 8 per cent dividend on the capital stock.

Create a reserve for the payment of Federal income taxes in the amount of..... 3,272.72

2. From the following financial statements of the Continental Clay Products Corporation submit a statement showing the following:

- a. Working capital and ratio.
- b. Investment of total capital in current assets, in fixed assets, and in the deferred charges and prepaid expenses.
- c. Inventory turnover.
- d. Return earned on common capital stock.
- e. Fixed property investment turnover.
- f. Gross profit percentage.
- g. Net profit percentage.

EXHIBIT "A"

CONTINENTAL CLAY PRODUCTS CORPORATION

COST OF PRODUCTION

Jan. 1, 19—, to Dec. 31, 19—

Depletion Clay and Sand.....	\$ 2,640.42	
Labor.....	320,140.27	
<i>Other Manufacturing Expenses:</i>		
Compensation Insurance.....	\$ 2,233.02	
Insurance, Fire.....	2,217.14	
Maintenance.....	33,665.66	
Materials and Supplies.....	60,968.00	
Miscellaneous Expenses.....	2,862.08	
Taxes.....	4,665.79	
Depreciation on Buildings....	2,197.91	
Depreciation on Dwellings	300.00	
Depreciation on Machinery		
and Equipment.....	4,577.58	
Depreciation on Kilns.....	7,060.64	
Depreciation on Horses and		
Wagons.....	364.41	
Depreciation on Auto Trucks	375.00	
Depreciation on Railroad		
Siding.....	226.86	
Depreciation on Mine Equip-		
ment.....	451.79	
Depreciation on Mine Devel-		
opment.....	985.36	123,151.24
<i>Cost of Clay Products Produced</i>		<u><u>\$445,931.93</u></u>

EXHIBIT "B"

CONTINENTAL CLAY PRODUCTS CORPORATION

STATEMENT OF INCOME, PROFIT AND LOSS

Jan. 1, 19—, to Dec. 31, 19—

<i>Sales:</i>		\$551,281.33
<i>Cost of Sales:</i>		
Inventory, Jan. 1, 19—.....	\$ 58,189.43	
Cost of Clay Products Produced.....	445,931.93	
	<u>\$504,121.36</u>	
Inventory, Dec. 31, 19—.....	34,454.32	
Cost of Goods Sold.....		<u>469,667.04</u>
Gross Profit.....		\$81,614.29
<i>Selling Expenses:</i>		
Advertising.....	\$ 727.72	
Selling Expenses.....	2,615.18	
Commissions on Sales.....	<u>1,095.93</u>	4,438.83
		<u>\$77,175.46</u>
<i>General and Administrative Expenses:</i>		
Association Dues and Subscriptions.....	\$1,564.83	
Employees' Life Insurance.....	1,423.16	
Office Salaries.....	5,337.95	
Office Supplies and Expenses.....	1,573.59	
Rentals Paid.....	72.00	
Salaries of Officers.....	4,905.00	
Depreciation on Office Equipment.....	<u>117.30</u>	14,993.83
Net Profit from Operations.....		<u>\$62,181.63</u>
<i>Incidental Income:</i>		
Purchase Discount.....	\$1,978.46	
Doubtful Accounts Recovered.....	217.24	
Rentals Received.....	<u>509.00</u>	2,704.70
		<u>\$64,886.33</u>
<i>Incidental Expenses:</i>		
Donations.....	\$ 140.00	
Interest Expense.....	2,615.54	
Doubtful Accounts.....	<u>397.55</u>	3,153.09
NET PROFIT TO SURPLUS (EXHIBIT "C")		<u><u>\$61,733.24</u></u>

EXHIBIT "C"

CONTINENTAL CLAY PRODUCTS CORPORATION

STATEMENT OF SURPLUS

Jan. 1, 19—, and Dec. 31, 19—

Balance, Jan. 1, 19— (Deficit).....	\$15,939.43
Net Profit for the year ended Dec. 31, 19—, as shown in Exhibit "B".....	<u>61,733.24</u>
Balance, Dec. 31, 19— (see Exhibit "D")....	<u><u>\$45,793.81</u></u>

EXHIBIT "D"

CONTINENTAL CLAY PRODUCTS CORPORATION

BALANCE SHEET

Dec. 31, 19—

Assets

Current:

Cash.....	\$ 3,678.20	
Petty Cash.....	50.00	
Accounts Receivable.....	20,551.35	
Inventory.....	34,454.32	\$ 58,733.87

Prepaid Expenses:

Prepaid Insurance.....	2,241.67
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Deferred Charges to Operation:

Mine Development.....	9,582.08
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Fixed:

Real Estate.....	\$ 30,530.00	
Land.....	27,847.55	
Buildings.....	134,140.89	
Kilns.....	160,341.80	
Plant Machinery and Equipment.....	109,266.34	
Horses and Wagons.....	4,044.13	
Automobile Trucks.....	4,000.00	
Office Equipment.....	1,172.30	
Dwellings.....	3,000.00	
Mine Machinery and Equipment.....	6,702.22	
Railroad Siding.....	3,402.91	
Clay and Sand Banks.....	89,003.26	573,451.40
		<u>\$644,009.02</u>

Liabilities and Ownership

Current Liabilities:

Notes Payable.....	\$ 35,000.00	
Accounts Payable.....	18,777.53	
Accrued Taxes.....	<u>4,236.32</u>	\$ 58,013.85

Reserves for Depreciation and Depletion:

Buildings.....	\$ 58,239.70	
Kilns.....	64,594.63	
Plant Machinery and Equipment.....	46,749.27	
Horses and Wagons.....	2,938.32	
Automobile Trucks.....	2,777.36	
Office Equipment.....	806.74	
Dwellings.....	800.00	
Mine Machinery and Equipment.....	1,124.69	
Railroad Siding.....	604.96	
Sand and Clay Banks.....	33,170.42	
Coal Mine.....	<u>5,509.27</u>	217,315.36

Capital Stock:

8% Preferred (500 shares outstanding) ..	\$ 50,000.00	
Common (2500 shares outstanding)	<u>250,000.00</u>	300,000.00

Surplus and Appropriated Reserves:

Earned Surplus (as shown in Exhibit "C")	\$ 45,793.81	
Reserve for Damage to Future Operations	<u>22,886.00</u>	68,679.81
		<u>\$644,009.02</u>

3. From the following adjusted trial balance for the year ended Dec. 31, 19—: prepare:

- a. Statement of income, profit and loss, separating the contracting expense from general expense.
- b. Statement of surplus.
- c. Balance sheet.

After the financial statements have been prepared, submit a statement showing:

- a. Return earned on capital invested.
- b. Working capital and ratio.
- c. Working capital turnover, if the net working capital at Jan. 1, 19—, (the beginning of the year) was \$20,691.73.
- d. Fixed property investment turnover.
- e. Net profit percentage.

CLINTON CONTRACTING CORPORATION
ADJUSTED TRIAL BALANCE
Dec. 31, 19—

Cash.....	\$ 3,651.42	
Accounts Receivable.....	19,135.38	
Accounts Payable.....		\$ 5,551.34
Buildings.....	228.55	
Charity and Donations.....	71.00	
Car and Truck Labor.....	385.45	
Car and Truck Material.....	3,879.73	
Petty Cash.....	100.00	
Purchase Discount.....		390.77
Reserve for Depreciation, Contractors Equipment.....		28,525.62
Reserve for Depreciation, Office Equipment		68.46
Contractors Equipment.....	42,778.06	
Office Equipment.....	320.25	
Goodwill.....	5,000.00	
Insurance.....	1,849.74	
Miscellaneous Income.....		695.36
Job Income.....		142,141.75
Interest.....	450.62	
Job Labor.....	53,010.55	
Job Material.....	48,030.50	
Heat and Light, Office.....	79.31	
Miscellaneous Contracting Expense.....	1,368.24	
New Business Expense.....	1,021.70	
Notes Payable.....		1,108.75
Accrued Office Salaries.....		140.00
Officers' Expenses.....	500.00	
Office Salaries.....	3,200.00	
Office' Expense.....	609.73	
Loss on Sale Capital Assets.....	27.40	
Licenses, Auto.....	262.20	
Prepaid Licenses.....	319.00	
Repairs to Equipment.....	2,480.12	
Rent for Equipment.....	787.12	
Real Estate.....	795.98	
Salaries Payable.....		2,391.62
Officers' Salaries.....	6,481.72	
Surplus.....		10,085.34
Capital Stock.....		20,000.00
Small Tool Expense.....	376.78	
Taxes.....	501.01	
Accrued Wages.....		65.75
Yard Labor and Material.....	599.02	
Depreciation on Contractors Equipment	8,723.92	
Depreciation on Office Equipment.....	37.03	
Inventory Supplies.....	4,103.23	
	<u>\$211,164.76</u>	<u>\$211,164.76</u>

4. The following balance sheet was prepared from the books of The Excelsior Corporation at Dec. 31, 19—:

Assets		Liabilities and Ownership	
<i>Current:</i>		<i>Current Liabilities:</i>	
Cash.....	\$ 22,760	Notes Payable.....	\$ 2,500
Notes Receivable.....	5,500	Accounts Payable.....	18,675
Accounts Receivable..	36,482	Reserve for Repairs.....	372
Inventories.....	44,610	Accrued Payroll.....	1,410
Accruals Receivable...	407	Reserve for Federal	
		Income Taxes.....	2,672
	\$109,759		\$ 25,629
<i>Sinking Funds:</i>		<i>Deferred Credits:</i>	
For Bond Redemption \$	12,000	Prepaid Discount.....	\$ 30
For Replacements.....	3,000		
	15,000	<i>Long Term Liabilities:</i>	
		Bonds Payable.....	50,000
<i>Permanent Investments:</i>		<i>Capital Stock Outstanding:</i>	
Capital Stock of the		Class "A" Common.....	125,000
Excelsior Company..	100,000	Class "B" Common.....	125,000
<i>Deferred Charges:</i>		<i>Surplus:</i>	
Prepaid Insurance.....	371	Free Surplus.....	112,571
<i>Fixed:</i>		Reserve for Bond Re-	
Land.....	69,500	demption.....	12,000
Buildings.....	\$100,000		
Less: Reserve for De-			
preciation.....	50,000		
Machinery.....	\$198,000		
Less: Reserve for De-			
preciation.....	99,000		
Automobiles.....	\$ 9,900		
Less: Reserve for De-			
preciation.....	3,300		
	6,600		
	\$450,230		\$450,230

1. What entries would be made if the board of directors made the following decisions and formally recorded them in the minute books after the above balance sheet had been prepared:

a. To declare the annual dividend of 6 per cent on the class "A" Capital Stock?

b. To provide a reserve for betterments amounting to \$75,000?

2. Show the entries to be made as a result of an appraisal made by engineers who found the value of the land to be in excess of the book value by \$22,000, and the present value of the building to be \$65,000, which was not due, however, to erroneous depreciation charges in the past.

3. What entry would be made if it had been disclosed that they had failed to set up an amount in the account for Reserve for Doubtful Accounts amounting to 1 per cent of the accounts receivable at Dec. 31, 19— the date the above balance sheet was prepared?

4. Would you consider the corporation to be in good financial condition as a result of studying the above balance sheet? Give specific reason or reasons for your answer.

5. Is it always possible to draw an accurate conclusion as to the financial condition of a business concern by reviewing only its balance sheet, as for example the one above illustrated? State definite reasons for your answer.

5. After a careful study of the statement on page 430, enumerate at least five reasons for the decrease in profits over the six-year period.

6. From the statements on this page show the computations for the:

1. Ratio of net profit to sales.
2. Turnover of inventory.
3. Age of accounts receivable if sales are made on a credit basis of 30 days net.
4. Net working capital and ratio.

UNION TRADING COMPANY
CONDENSED BALANCE SHEET

Dec. 31, 19—

Assets			Liabilities and Capital Accounts		
<i>Current:</i>			<i>Current Liabilities:</i>		
Cash.....	\$ 7,700		Accounts Payable..	\$6,487	
Accounts Receivable...	25,208		Notes Payable.....	2,000	
Notes Receivable.....	386		Accruals Payable..	800	\$ 9,287
Inventory.....	<u>46,919</u>	\$80,213			
			<i>Long Term Liabilities</i>		
			Mortgage Payable.....		7,186
<i>Deferred Charges.....</i>		532	<i>Reserves for Depreciation.....</i>		10,759
<i>Fixed:</i>			<i>Capital Stock.....</i>		
Store Equipment.....	\$ 5,069				50,000
Auto Equipment.....	1,189		<i>Surplus.....</i>		<u>19,919</u>
Office Equipment....	5,211				
Warehouse Equipment	4,937	16,406			
		<u>\$97,151</u>			<u>\$97,151</u>

UNION TRADING COMPANY
CONDENSED STATEMENT OF INCOME, PROFIT AND LOSS

Jan. 1, 19—, to Dec. 31, 19—

Net Sales.....	\$240,000
Cost of Goods Sold.....	<u>169,084</u>
Gross Profit.....	\$ 70,916
Selling Expenses.....	<u>28,860</u>
	\$ 42,056
Administrative Expenses.....	<u>31,146</u>
Net Profit from Sales.....	\$ 10,910
Other Income.....	<u>2,850</u>
	\$ 13,760
Other Expenses.....	<u>5,460</u>
Net Profit to Surplus.....	<u>\$ 8,300</u>

The inventory at Jan. 1, 19—, amounted to \$34,500.

THE TREMONT TRADING COMPANY
STATEMENT OF INCOME, PROFIT AND LOSS FOR YEARS ENDED

	Dec. 31, 1929	Dec. 31, 1928	Dec. 31, 1927	Dec. 31, 1926	Dec. 31, 1925	Dec. 31, 1924
Gross Sales.....	\$263,805.63	\$229,521.29	\$256,807.12	\$242,828.10	\$262,985.60	\$246,148.79
Less Sales Returns and Allowances.....	8,721.09	9,086.08	13,552.12	2,611.98	2,672.57	2,609.60
Net Sales.....	\$255,084.54	\$220,435.21	\$243,255.00	\$240,216.12	\$260,313.03	\$243,539.19
Cost of Sales						
Inventory at Beginning of Year.....	31,103.75	\$ 27,893.72	\$ 38,894.16	\$ 35,437.89	\$ 46,919.07	\$ 55,198.47
Purchases.....	195,466.71	161,449.08	162,598.12	171,917.85	176,045.44	167,680.85
Total.....	\$226,570.46	\$189,342.80	\$201,492.28	\$207,355.74	\$222,964.51	\$222,879.32
Inventory at End of Year.....	\$ 38,242.06	\$ 31,103.75	\$ 27,893.72	\$ 38,894.16	\$ 35,437.89	\$ 46,919.07
Purchase Returns and Allowances.....	3,988.53	3,547.30	4,754.69	3,520.13	3,839.63	3,337.04
Total.....	\$ 42,230.59	\$ 34,651.05	\$ 32,648.41	\$ 42,414.29	\$ 39,277.52	\$ 50,256.11
Cost of Sales.....	\$184,339.87	\$154,691.75	\$168,843.87	\$164,941.45	\$183,686.99	\$172,623.21
Gross Profit.....	\$ 70,744.67	\$ 65,743.46	\$ 74,411.13	\$ 75,274.67	\$ 76,626.04	\$ 70,915.98
Selling Expenses.....	\$ 39,837.89	\$ 35,670.90	\$ 38,320.73	\$ 29,074.52	\$ 31,980.57	\$ 28,859.53
Administrative Expenses.....	36,112.74	\$ 37,571.43	\$ 36,395.34	\$ 43,471.27	\$ 36,886.90	\$ 31,145.79
Total Operating Expenses.....	\$ 75,950.63	\$ 73,242.33	\$ 74,716.07	\$ 72,545.79	\$ 68,867.47	\$ 60,005.32
Net Profit.....				\$ 2,728.88	\$ 7,758.57	\$ 10,910.66
Net Loss.....	\$ 5,205.96	\$ 7,498.87	\$ 304.94			

7. From the following information prepare:

- a.* Work sheet
- b.* Adjusting journal entries.
- c.* Statement of income, profit and loss, statement of ownership and balance sheet, paying particular attention to form.

Trial Balance, Dec. 31, 19—

Cash.....	\$	4,000.00	
Accounts Receivable.....		15,000.00	
Notes Receivable.....		10,000.00	
Inventory, Jan. 1, 19—.....		8,837.50	
Prepaid Insurance.....		500.00	
Delivery Equipment.....		675.00	
Reserve for Depreciation, Delivery Equipment.....			\$ 337.50
Land.....		5,000.00	
Buildings.....		10,000.00	
Reserve for Depreciation, Buildings.....			1,500.00
Office Furniture and Fixtures.....		1,000.00	
Reserve for Depreciation, Office Furni- ture and Fixtures.....			500.00
Machinery.....		2,500.00	
Reserve for Depreciation, Machinery....			1,500.00
Notes Payable.....			500.00
Accounts Payable.....			4,000.00
D. L. Schrodell, Capital.....			52,500.00
Sales.....			50,000.00
Prepaid Rentals Received.....			1,075.00
Purchases.....		42,500.00	
Wages and Salaries.....		11,400.00	
Office Expenses.....		1,000.00	
Commissions Earned.....			500.00
Discount on Purchases.....			100.00
Discount on Sales.....		100.00	
		<u>\$112,512.50</u>	<u>\$112,512.50</u>

Inventory, Dec. 31, 19—.....	\$7,641.83
Commissions receivable.....	92.10
Rent income for the year.....	1,000.00
Insurance expense for the year.....	250.00
Accrued wages.....	216.31

Depreciation on building, 3 per cent of cost.

Depreciation on office furniture and fixtures, 10 per cent of cost.

Depreciation on machinery, 15 per cent of cost.

Depreciation on delivery equipment, 25 per cent of cost.

Create a reserve for doubtful accounts equal to one-third of 1 per cent of the outstanding accounts receivable at Dec. 31, 19—.

Chapter XI

1. Set up accounts for the items listed below and enter therein the balances.

Cash.....	\$ 3,765	Accounts Payable:	
Inventory, Jan. 1, 19—...	15,606	D. N. Saunders.....	\$ 3,618
Delivery Equipment.....	2,450	M. H. Jones.....	2,105
Notes Payable.....	1,000	Sales.....	91,510
Purchases.....	55,719	Purchase Returns.....	447
Advertising.....	967	Salesmen's Salaries.....	14,869
Postage.....	664	Office Supplies.....	710
Telephone and Telegraph	858	Commissions Earned....	865
Rent Expense.....	2,400	P. D. Converse, Draw-	
W. D. Harrison (Account		ings.....	2,063
Receivable).....	2,928	Notes Receivable.....	950
Store Equipment.....	1,825	Office Furniture and	
Freight In.....	2,501	Fixtures.....	910
Delivery Expense.....	2,450	Sales Returns.....	2,466
Profit and Loss		Traveling Expenses....	3,108
		Office Salaries.....	3,036
		P. D. Converse, Capital,	
		Jan. 1, 19—.....	20,700

The adjustments to be considered at the close of the year, Dec. 31, 19—, were as follows:

Inventory.....	\$13,155.71
Depreciation on delivery equipment, 25 per cent of cost.	
Depreciation on store equipment, 10 per cent of cost.	
Depreciation on office furniture and fixtures, 8 per cent of cost.	

Create a reserve for doubtful accounts equal to one-fourth of 1 per cent of the net sales.

Prepare the following:

- a. Adjusting journal entries, and postings to the ledger accounts.
- b. Closing journal entries, and postings to the ledger accounts.
- c. Proof trial balance.

2. Set up accounts for the items appearing in the following trial balance. Enter the balances in the accounts. After considering the adjustments, prepare the following:

- a. Work sheet.
- b. Statement of income, profit and loss.
- c. Statement of ownership.
- d. Balance sheet.
- e. Adjusting entries and postings to the accounts.
- f. Closing entries and postings to the accounts.
- g. Proof trial balance.

WINDPROOF WEATHER STRIP CORPORATION

TRIAL BALANCE

Dec. 31, 19—

Cash.....	\$ 2,640.20	
Notes Receivable.....	647.22	
Accounts Receivable.....	22,096.69	
Inventory, Jan. 1, 19—.....	9,677.19	
Securities.....	4,750.00	
Furniture and Fixtures.....	1,475.12	
Notes Payable.....		\$ 1,409.82
Accounts Payable.....		7,496.02
Capital Stock.....		30,000.00
Surplus, Jan. 1, 19—.....		1,492.37
Sales.....		95,366.67
Sales Returns.....	2,421.83	
Purchases.....	76,858.55	
Purchase Allowances.....		1,866.25
Freight In.....	1,825.13	
Advertising.....	427.72	
Repairs to Furniture and Fixtures.....	113.27	
Rent.....	3,600.00	
Wages.....	10,642.67	
Stationery and Printing.....	584.66	
Janitor Service.....	147.52	
Postage.....	356.40	
Taxes.....	115.62	
Interest on Securities.....		201.88
Rentals Received.....		600.00
Interest and Discount Paid.....	53.22	
	<u>\$138,433.01</u>	<u>\$138,433.01</u>

Adjustments, Dec. 31, 19—:

Inventory.....	\$7,519.34
Wages accrued.....	193.85
Interest and discount prepaid.....	3.22
Interest accrued on securities.....	33.47
Rentals received unearned.....	25.00

Depreciation on furniture and fixtures, 10 per cent of cost.

Create a reserve for doubtful accounts equal to 1 per cent of the accounts receivable outstanding at Dec. 31, 19—.

3. From the following information prepare a work sheet.

Cash.....	\$ 8,500	
Accounts Receivable.....	20,300	
Notes Receivable.....	7,500	
Inventory, Jan. 1, 19—.....	8,000	
Insurance.....	500	
Furniture and Fixtures.....	3,000	
Notes Receivable Discounted.....		\$ 2,050
Accounts Payable.....		3,000
Reserve for Depreciation Furniture and Fix- tures.....		800
Reserve for Doubtful Accounts.....		55
Mortgage Payable.....		10,000
Capital Stock.....		25,000
Surplus.....		4,175
Sales.....		81,825
Purchases.....	63,500	
Wages.....	12,250	
Rent.....	3,150	
Office Supplies and Expenses.....	900	
Interest on Mortgage.....	300	
Prepaid Rentals Received.....		400
Commissions Earned.....		595
	<u>\$127,900</u>	<u>\$127,900</u>

Inventory of merchandise.....	\$7,540
Commissions earned but not received.....	65
Insurance unexpired.....	250
Wages due but unpaid.....	375
Rentals received but unearned.....	50

Depreciation on furniture and fixtures, 10 per cent of cost.

Charge off one-half of 1 per cent of total sales as estimated uncollectible accounts receivable.

After completion of the work sheet, prepare the following:

- a. Statement of income, profit and loss.
- b. Statement of surplus.
- c. Balance sheet.
- d. Adjusting entries.
- e. Closing entries.

4. From the following work sheet, prepare adjusting and closing journal entries to close the operating accounts in the ledger.

Trial Balance		Profit and Loss		Balance Sheet	
Cash.....	\$ 11,709.14			\$11,709.14	
Accounts Receivable.....	15,482.10			15,482.10	
Store Equipment.....	1,891.29			1,891.29	
Office Equipment.....	1,177.96			1,177.96	
Inventory, Jan. 1, 19—	5,640.78	\$ 5,640.78			
Land.....	13,500.00			13,500.00	
Building.....	28,745.00			28,745.00	
Accounts Payable.....	\$ 4,800.22				\$ 4,800.22
Mortgage Payable.....	5,000.00				5,000.00
W. E. Conkel, Capital.....	58,496.62				58,496.62
W. E. Conkel, Personal.....	509.77				509.77
Sales.....	79,483.27	\$79,483.27			
Sales Returns.....	1,007.88	1,007.88			
Purchases.....	53,740.92	53,740.92			
Purchase Returns.....			806.05		
Freight and Cartage In.....	1,256.28	1,256.28			
Freight and Cartage Out.....	843.10	843.10			
Insurance.....	130.30	130.30			
Repairs to Building.....	1,272.29	1,272.29			
Salaries.....	8,427.61	8,427.61			
Taxes.....	652.22	652.22			
Heat and Power.....	510.99	510.99			
Commissions Earned.....	436.25	436.25			
Interest Expense.....	300.00	300.00			
Store Expense.....	1,525.10	1,525.10			
Office Expense and Supplies.....	1,719.22	1,719.22			
	<u>\$149,532.18</u>				
Inventory Dec. 31, 19—			3,009.10	3,009.10	6,707.98
Net Profit.....		6,707.98			
		<u>\$83,734.67</u>		<u>\$83,734.67</u>	<u>\$75,514.59</u>

5. *a.* At Jan. 1, 19—, the financial condition of V. C. Bennett was represented by the following account balances.

Inventory.....	\$ 4,250.00
Notes Receivable.....	1,500.00
Accounts Payable.....	6,500.00
Furniture and Fixtures.....	750.00
Cash.....	2,172.56
Accounts Receivable.....	14,156.20
Notes Payable.....	500.00
Delivery Equipment.....	671.24

(Record the above balances in ledger accounts.)

b. During the year 19—, the transactions were as follows, in summarized form:

1. Sales to customers on account, \$57,842.10.
2. Purchases from creditors on account, \$29,956.27.
3. Wages paid in cash, \$10,946.20.
4. Rent paid in cash, \$2,400.
5. Customers remitted cash, \$61,703.85.
6. Office expenses paid in cash, \$760.90.
7. V. C. Bennett withdrew merchandise costing \$275.
8. Creditors were paid \$31,542.20.
9. Customers paid off \$1,250 notes.
10. Creditors' notes of \$500 were paid in full.
11. Customers were allowed \$456.73 for damaged goods.
12. Interest received on notes receivable amounted to \$60, cash.
13. Delivery expenses were paid in cash, \$1,410.
14. Freight bills paid on purchases, \$856.10.

Record the summary transactions in the proper accounts.

- c.* Prepare a trial balance.
- d.* Prepare a work sheet. (Inventory at Dec. 31, 19—, amounted to \$5,109.23; depreciation on delivery equipment, 30 per cent of cost; on furniture 10 per cent of cost.)
- e.* Prepare in proper form the following statements:
 - Statement of income, profit and loss.
 - Statement of ownership.
 - Balance sheet.
- f.* Prepare adjusting and closing entries, and postings to the ledger.
- g.* Prepare a post-closing trial balance.
6. The following ledger accounts are completely posted at June 30, 19—, except for the closing inventory, which has a value of \$5,540.22. Prepare:
 1. Trial balance.
 2. Complete adjusting and closing entries.
 3. Financial statements:
 - a.* Statement of income, profit and loss.
 - b.* Statement of ownership.
 - c.* Balance sheet.
 4. Proof trial balance.

Cash	1	Notes Receivable	2
\$48,375	\$43,450	\$10,000	
Accounts Receivable	3	Inventory	4
\$60,000	\$44,275	19— Jan. 1	\$5,500
Securities	5	Land	6
\$4,000		\$3,000	
Building	7	Automobile Trucks	8
\$6,300		\$1,000	
Furniture and Fixtures	9	Notes Payable	10
\$500			\$5,077.50
Accounts Payable	11	C. C. Sheppard, Capital	12
\$45,500	\$53,500	19— Jan. 1	\$35,000
Sales	13	Sales Discounts	14
	\$60,000	\$1,000	
Purchases	15	Purchase Discounts	16
\$53,500			\$1,500
Wages	17	Store Expenses	18
\$2,700		\$350	
Advertising	19	Office Expenses	20
\$310		\$225	

Taxes		21	Delivery Expense		22
\$77.50			\$700		
Insurance		23	Interest on Securities		24
\$75					\$100
Rentals Received		25	C. C. Sheppard, Personal		26
		\$300	\$90		
Profit and Loss		27			

Chapter XII

1. Classify the following as capital or revenue expenditures. Give specific reasons for your answers.

1. Painting of firm's name on delivery truck.
2. Five-year lease on storage space.
3. Taxes paid on property under construction.
4. Freight on office equipment purchased.
5. Placing tile drain pipes under a field used for storing second-hand automobiles.
6. Organization expenses of a corporation.
7. New tire for an old automobile truck.
8. Papering a house just after purchase, which is to be rented.
9. Renewing a cog wheel in a large machine.
10. Adding a patented device to a machine so that production is doubled.

2. Give reasons to substantiate your answers in each of the following cases:

1. A large office building, recently erected and in first-class condition, was purchased for \$450,000. The building was remodeled at a cost of \$50,000, after the purchase. How should this expenditure be taken care of on the books?

2. A railway company replaced a stretch of their old 80-pound rails with new 100-pound rails. The original cost of the 80-lb. rails was \$475,000, and if the same kind of rail had been used in replacing the scrap rail it would have cost \$500,000. The new 100-lb. rail cost \$700,000. How should the \$700,000 expenditure be treated?

3. A new auto truck was purchased. A week after it was delivered and had been in daily use, the owner purchased a spare tire costing \$40.50. The day the spare tire was purchased, the driver ruined one of the tires by running over some broken glass. What type of expenditure does the \$40.50 represent?

4. An ice company completely overhauled their fleet of 20 auto trucks during the winter. The original cost of the trucks, 2 years ago, was \$60,000. They had been depreciated 50 per cent. The cost of overhauling the cars was \$6,000. What is the nature of this expenditure?

5. The Winona Hotel Company installed a sprinkler system throughout the building at a cost of \$20,000. By so doing the insurance rate was decreased 50 per cent. The book value of the building, originally costing \$160,000, will be entirely depreciated in five years. How would you treat the \$20,000 expenditure?

6. The Lone Pine Coal Company was organized in 1922, to produce coal from a surface strip. The cost of removing three feet of surface soil from the plot was \$17,491.36. It is estimated that the coal will be entirely removed in three years. What disposition should be made of this expenditure?

7. A street car with a record of 75,000 miles run since its purchase required a new set of wheels. Four new pairs of wheels were placed on the car at a total cost of \$600. This represents what type of expenditure?

8. A club, organized for social and athletic purposes, was donated a brick building for its quarters. The building had been built for 15 years when it was transferred to the club. A new dining room was built on the first floor and a swimming tank was constructed in the basement. The cost of this work constitutes what kind of an expenditure?

9. A machine, originally costing \$4,500 and in use for 4 years, had been depreciated by the straight-line method at the rate of 20 per cent per annum (no scrap value predetermined). At the beginning of the fifth year, this machine was traded in for a new one having a price of \$6,000. An allowance of \$500 was made on the old machine. Cost of installing new machine, labor, material, etc., was \$500. Power to run the new machine, oil, and attention of machinists during the first year cost \$1,215.20. Classify these expenditures.

3. Designate the type of expenditures represented by the following, giving reasons for your statements:

1. Cost of laying a railway side track from the main line to site of building construction, a distance of one-half mile. The cost was \$10,000 and the track will remain in position for at least two years or until such time as the building will be completed.

2. Purchase of \$75 worth of shade trees to be set out around building of a manufacturing plant.

3. Purchase of four new machines at total cost of \$6,000. In order to install them to the best advantage, the old machines which were to remain in use were moved to make room for them. The cost of removal was \$500.

4. In 1925 a telegraph company incurred a \$550,000 loss to its overhead lines as a result of snow and sleet storms.

5. A railroad company spent \$250,000 for landscape gardening upon its property surrounding its passenger stations.

6. A power plant is remodeled and enlarged to permit the installation of more modern type equipment. The cost of remodeling was \$6,500; improvements \$7,250.

7. Payment of \$10,000 as damages awarded to widow of man killed while working on building construction of a manufacturing plant, said construction being carried on by the company instead of letting a contract.

8. Books of account were purchased by a corporation at the time of organization at a cost of \$175. It is estimated that the different books will be in use from one to five years.

9. After obtaining a 5-year lease on a building, the tenant made improvements and alterations at a cost of \$4,695.82.

10. Watchman's wages on new construction, amounting to \$150 a month.

4. The Indiana Union Traction Company demolished one of their old wooden stations and erected in its place a larger station constructed of brick and stone at a cost of \$75,000. The old structure was built at an original cost of \$15,000, 20 years ago. It was the practice of the company to charge to depreciation yearly, with a corresponding amount set up in a reserve equal to 4 per cent of the cost value of such structures. The salvage of the old building amounted to \$955. Show all entries necessary in connection with the removal of the old building and its replacement by the new building.

5. The Canonsburg Coal Company, through its board of directors, decided to open up a strip coal mine on one of their properties. Before the vein of coal could be reached, a 4-foot layer of soil and loose rock had to be removed by steam shovel. The cost of removing this soil, which required 8 weeks, consisted of the following: steam shovel engineer, fireman, and watchman \$1,060; fuel and supplies for shovel \$295; repairs to shovel \$160; hauling dirt \$4,750; labor \$2,250. Depreciation on the shovel amounted to \$2,500 per year. It is estimated that it will take 3 years to exhaust this bed of coal. How would you handle the above charges? Show all necessary entries, all expenses being paid by cash.

Chapter XIII

1. The Novelty Toy Corporation had a surplus of cash on hand at Jan. 27, 19—, which they did not need for current operating expenses until sometime in August of the same year. The board of directors decided to invest \$30,000 in 5 per cent Bloomfield Bridge bonds, interest payable Jan. 1 and July 1 of each year. The bonds were purchased on Jan. 31, at face value plus accrued interest. At July 1, when a semi-annual balance sheet was prepared, the bond market was slightly depressed, and the market price of the above bonds was listed at 96. The bonds were sold Aug. 16th at 98½.

a. Show the entries made on Jan. 31, July 1, and Aug. 16.

b. At what figure should the bonds be shown on the balance sheet at July 1?

2. The Port Star Machine Company were manufacturers of a varied line of machinery. Much of this machinery was shipped in sections and assembled in the plants of the purchasers. Consequently, the company employed a number of assemblymen, and these workmen were given expense money when they were sent out of town. At Dec. 1, 19—, the

balance in the Advances to Assemblymen account was \$498.50. During December the men were advanced a total of \$555. At Dec. 31, 19—, a summary of the expense accounts, supported by receipts, disclosed the following information:

Meals.....	\$ 475.25
Lodging.....	360.00
Carfare.....	165.90
Telegrams.....	6.65
Taxicabs.....	3.50
	<u>\$1,011.30</u>

- a. Show all necessary entries to record the above transactions on the books of the company.
- b. State the amount and the name of the financial statement in which would appear the balance of the Advance account, at Dec. 31, 19—.

3. The Hale-Hart Company received a note for \$956.73, in payment of an account with L. M. Jenkins. The note was dated Nov. 16, 19—, matured 60 days from date, and carried interest at 6 per cent. Thirty days after date, the Hale-Hart Company discounted the note at the bank, which charged a discount rate of 6 per cent. Under what heading or headings and at what value should the note be carried on the balance sheet at Dec. 31, 19—?

4. The books and records of the Kokomo Electric Supply Company revealed the following information at Dec. 31, 19—, the close of the fiscal year:

Total purchases of merchandise during the year.....	\$458,962.17
Inventory at beginning of year.....	44,097.82
Inventory at close of year (cost price).....	42,153.35
Inventory at close of year (market price)....	39,068.50

- a. At what figure should the inventory at the close of the year be shown in the financial statements? Give reasons in detail.
 - b. Using your own figures for sales and expenses other than the cost of sales, show how the closing inventory figure should be handled in the statement of income, profit and loss. State reasons in full justifying your method. What entry is necessary?
 - c. What entry, if any, would be necessary if it was certain that the inventory value of \$39,068.50 would decline at least \$5,000 more in the following year?
 - d. If the market value of the closing inventory at Dec. 31, 19—, had been \$45,003.87, instead of \$39,068.50, what effect would it have had on the net profit for the year?
5. Describe a petty-cash system, incorporating the necessary forms, and using your own figures. Show the entries necessary to create and

reimburse the petty cash fund, and six examples of petty-cash expenditures.

6. The following items represent expenditures appearing in accounts in the ledger. Under what heading would these items appear in the balance sheet?

- a. Unamortized bond discount on bonds maturing in 7 years.
- b. Tenant improvements on leased property, the lease on which will expire in 5 years.
- c. Discount paid to bank in advance.
- d. Organization expenses of a corporation.
- e. Unused advertising literature.
- f. Moving expense incurred in moving to a new location where a lease has been obtained for 5 years.
- g. Two months' supply of coal on hand.
- h. Rent paid in advance for 1 month.

7. When a Reserve for Inventory Losses account is created, under what conditions should the offsetting charge be made to the following accounts:

- a. Surplus?
- b. Profit and Loss?

8. Which of the following items should be included in the cost of an inventory?

- a. Inspection expenses of raw materials.
- b. Labor cost in counting units of material when taking a physical inventory.
- c. Freight and cartage charges on incoming raw materials.
- d. Labor cost in transferring materials from one location to another in the storeroom.
- e. Value of raw materials stolen from storeroom.
- f. Salvaged material at appraised value once withdrawn for use and later returned to storeroom in such condition that it could again be utilized.
- g. Deterioration and obsolescence costs due to effect of weather on materials and out-of-date stores.

Chapter XIV

1. P. T. Morgan had been established in business for 30 years. He decided to retire and entered into negotiations with the prospective buyers, N. T. Hall and A. P. Merrill. Morgan maintained that his business was worth more than his net assets showed on the books. An agreement was finally reached whereby Merrill and Hall were to pay for the net book value of the assets at Jan. 1, 1930, plus the value of the goodwill. The basis for computing the goodwill was to be 4 years' purchase price of the profits for the past 5 years, which were in excess of 9 per cent of the capital invested at the beginning of each year. The ownership and profits for each of the 5 years are as follows:

<u>Year</u>	<u>Ownership Jan. 1</u>	<u>Profit for the Year</u>
1925	\$77,856.40	\$7,792.80
1926	79,618.23	7,995.16
1927	83,509.91	8,067.90
1928	82,429.67	8,643.11
1929	84,692.09	8,892.35
1930	83,227.35	

What price did Morgan receive for his business?

2. What price would have been paid for the business in the above problem had the goodwill been computed by capitalizing, at 10 per cent, the average profits of the past 5 years in excess of 10 per cent of the average investment at the beginning of each of the five years?

3. The Polar Ice Company purchased the plant property and equipment of the Artic Ice Company for the purpose of eliminating competition. The price paid was \$356,875. The Polar Ice Company had adequate facilities, at the time of the purchase, for the manufacture and distribution of ice for both its customers and those originally served by the Artic Ice Company. The board of directors of the Polar Ice Company decided not to abandon the purchased property immediately, but to hold it for several years, thinking that they probably might have some use for it in the future. At the end of the first year, after the purchase had been made, it was found that the following expenses had been incurred in connection with the Artic Ice Company property:

City and county taxes.....	\$ 1,854.17
Assessment for street improvement.....	2,590.10
Depreciation.....	28,742.90
Watchmen.....	1,800.00

The board of directors were equally divided as to what disposition to make of these charges. One group maintained that they should be capitalized and added to the cost of the plant, while another group claimed the only way to properly handle the charges would be to show them as operating expenses of the Polar Ice Company. The argument advanced by the latter group was that the income of the Polar Ice Company had increased materially as a result of serving the customers of the company whose business was purchased.

You are called into consultation with the board of directors to give your view on the matter. Which group would you agree with, or would you advance a better method than has been suggested for handling the expenses?

What entry should have been made when the property was purchased?

At the end of 3 years the Artic Ice Company property was wrecked. What entries should be made at this time, if the same expenses were incurred during the second and third years except the assessment for street improvement, considering that the land was appraised at \$55,000, and the salvage brought \$30,000 cash?

4. The Roland Rope Company purchased a patent on Feb. 25, 1926, for \$30,000 cash. The company made additional expenditures of \$6,500

in perfecting the patent up to Dec. 31, 1926. In 1927, the company sued a competitor for infringement on its patent rights, involving a cost of \$4,000, but the jury disagreed and no verdict was rendered. In 1928, the company again brought suit, and was victorious. \$5,000 damages were awarded, the cost of the second trial amounted to \$3,500, and the company was granted royalties from the defendant in the amount of \$7,000 for 1927, and \$12,000 for 1928.

Prepare journal entries for all transactions.

What value should the Patents account show, if there were no other patents owned, at Dec. 31, 1928?

5. A large manufacturing concern has most of its machinery purchased on the installment plan, in monthly payments, a bill of sale not being given until the machinery is paid in full. There is also a royalty paid on the output of some of the machines bought on the installment plan. At the close of the year there are several machines not yet paid in full. How would you treat the machinery, the installments paid and the royalty in your statement?

Pennsylvania State C. P. A. Examination, November, 1914.

6. The Flex-O-File Company has a Patents account in their ledger which shows a debit posting of \$37,550, which was entered 5 years ago. This figure represents the cost of patents purchased at that date. There were no credit postings in the account, and there was also no account for Reserve for Depletion of Patents. Upon investigation it was learned that the board of directors had passed a resolution to show the patents at cost indefinitely since goodwill was being created as a result of the patent rights conferred upon the Company.

State your opinion in regard to this action of the board of directors and make any adjustments you deem necessary.

7. The following facts are ascertained from the books of account and from the minor executives of a manufacturing concern in connection with the construction of a pipe-threading machine:

Materials withdrawn from storeroom at cost...	\$167.18
Labor charged to cost of construction.....	94.50
Engineers' time in designing the machine.....	100.00

Time required for actual construction, 130 hours.

Production of plant was not reduced while the threading machine was under construction.

No overtime of employees working by the day or hour was necessary in the construction of the machine.

The overhead expense charge to production was \$1.05 for each direct-labor hour.

The cost of the same type of machine if purchased on the market would have been \$550 net.

At what value should the pipe cutting machine be placed upon the books?

8. A book-publishing company has brought out its first book. Plates capable of 100,000 impressions cost \$20,000; composition, proofreading, etc., cost \$6,000; the author is to receive a royalty of 25 cents per volume on the books sold. As a first edition, 20,000 books are printed at a labor

cost of \$2,000 and a further charge of \$1,500 to cover the proportion of general expenses. At the end of the year 10,000 copies had been sold for \$20,000 and the demand for the book had almost ceased. How would you prepare the account under the following conditions?

1. If it were ascertained that the demand for the book had practically ceased.

2. If a steady demand would continue until the plates were worn out.

Pennsylvania State C. P. A., 1909.

9. A concern engaged in building locomotives wishes to equip their machine shop with some new machinery of standard types, and determines to have it made in their own plant by their own workmen from material which they have in stock. By this means it will cost much less than if they bought it from outsiders. They desire consequently to charge their Machinery and Large Tools account with the current market price of the machinery so produced, on the ground that their workmen, while making it, have been detached from other profitable employment.

Discuss this question, pro and con, and say what you would advise to be done, giving your reasons.

Pennsylvania State C. P. A., 1906.

10. When the Belle Isle Foundry Company began operations, hammers, chisels, drills, files, wrenches and other tools were purchased at a cost of \$2,495.35. A summary of the transactions pertaining to the Small Tools account appears below:

Year	Replacements purchased	Original quantity increased by additional purchases	Appraisal value at end of year
During the first.....	\$ 568.15		\$2,050.00
During the second.....	899.54		1,875.00
During the third.....	1,075.63	\$498.52 (included in the \$1,075.63)	2,400.00
During the fourth.....	1,168.57		2,250.00
During the fifth.....	1,252.10	\$550.00 (included in the \$1,252.10)	2,610.00

1. By two different methods show:

a. The balance appearing in the Small Tools account at the close of each year.

b. The annual operating expense charge each year.

c. How much does the depreciation charge differ for the 5-year period? What are the reasons for the different amounts?

2. Which method would you recommend? State clearly the reasons for your choice.

11. The Chamber of Commerce of a mid-western city made the following offer to the Stanton Staybolt Company, which was accepted:

1. Title to a brick building originally costing \$40,000, 15 years ago, was to be transferred to the company for a fee of \$1.

2. The company was to pay a ground rent of \$1,800 each year in advance for ten years, after which time the rent was to be reduced to \$1,200 a year as long as the company remained.

3. The appraisal value of the building was placed at \$20,000, by engineers, with an estimated remaining life of 15 years.

Prepare the entries to show:

- a. The receipt of the building on the books of the company.
- b. Payment of ground rent for the first year.
- c. Also state what policy should be adopted in charging off depreciation on the building each year.

12. The Artificial Gas & Producing Company manufacture a varied line of gases such as hydrogen, tear gas, oxygen, etc. The metal tanks used as containers cost \$10 each, and they have 50,000 tanks on hand.

- a. What type of expenditure is represented by the purchase, and in what financial statement would it appear?
- b. One hundred tanks of hydrogen were sold to the Western Wrecking Company at \$5 a tank for the gas.

1. What entry should be made when the tanks of gas were shipped? When the tanks were returned?

2. What entry would be made if the tanks were never returned due to the customer's losing them on a boat of theirs which sank. The customer later became bankrupt and settled at 50 cents on the dollar with their creditors (considering that the gas was previously paid for in full)?

13. On Jan. 1, 1926, an auto truck costing \$4,000, was estimated to have a four years' useful life and a trade-in value of \$600. On Jan. 1, 1929, an appraisal company estimated the cost of replacement to be \$4,500, and the life of the old truck was considered to be 2 years from Jan. 1, 1929.

- a. What was the sound value of the truck on Jan. 1, 1929?
- b. What entries are necessary to record this sound value?
- c. Show the adjusting entry to record the depreciation at Dec. 31, 1929, and Dec. 31, 1930.

Just Print

Chapter XV

1. a. Record the following transactions in the special columnar journals listed below:

General journal
Voucher register
Sales journal
Cash receipts book
Cash disbursements book

The form to be used for each of these journals is to be patterned after the illustrations in Chap. XV.

19—

Jan. 2. R. R. Miller entered the electrical supply and contractor's supply business, investing \$10,000 cash.

3. Paid rent for store building to Oakland Realty Company, \$100. (Enter in both the voucher register and the cash disbursements book.)

4. Purchased conduit, wire, porcelain tubes, and cleats on account from the Western Electric Company, \$3,000, terms 1/10—n/30. (Department B.)

5. Purchased \$2,500 miscellaneous electrical supplies on account from the Liberty Supply Company. (Department A.)
7. Gave a check to Drake & Company for \$50 in payment of a bill of wrapping paper, twine, bags, and other store supplies. (Enter in both the voucher register and cash disbursements book.)
10. Sold Ford & Son on account, 1/10—n/30, \$300 electrical supplies. (Department A.)
11. Sold the Zig Zag Electric Company on account, 1/10—n/30, \$2,500 contractor's supplies, (Department B.) Received a bill from the *Morning Mail* for advertising, \$37.50.
12. Purchased a delivery truck from the Buck Motor Company, paying cash \$1,400. (Enter in both the voucher register and cash disbursements book.) Sent a check to the Western Electric Company in payment of their bill less discount.
13. Purchased from the General Electric Company on account: Department A, \$2,750; Department B, \$5,410.
14. Sold Slyder and Wichert a bill of goods on account as follows: Department A, \$1,410; Department B, \$3,647.
16. Paid wages by check, \$295. (Enter in both the voucher register and the cash disbursements journal. Show check payable to cashier.)
17. Sold J. M. Thompson a bill of goods as follows: Department A, \$1,775; Department B, \$1,998.
19. Gave a check to the Office Supply Company for \$15 covering books, ink, carbon paper, etc. (Enter in both the voucher register and the cash disbursements journal.)
20. Received a check from Ford & Son paying their account in full less the discount.
21. Received a check from the Zig Zag Electric Company for \$2,475. Give credit for discount deducted.
24. Gave a note to the General Electric Company for \$8,160.
26. Purchased from the Liberty Supply Company on account \$4,726. (Department B.)
28. Received a 30-day, 6 per cent note from J. M. Thompson for \$3,773.
31. Paid wages \$300.
Sent Slyder & Wichert credit memorandum for goods damaged in transit, \$76. (Department B.)

The corrected solution to this problem should be used as a basis for problem assignment in connection with Chap. XVI, covering posting, preparing trial balance and proving the control accounts.

2. The following transactions occurred in a trading business having three different departments. Record the transactions in the proper journals. All items for payment should be entered first in the voucher register. Design your own forms:

19—

- May 1. Paid rent for the month to the Mackinaw Trust Company, \$150.

3. Sold H. Clayton & Company on account, 1/10—n/30, Department A, \$3,856.92.
4. Paid American Express Company charges on advertising novelties, \$8.65. Advertising novelties were purchased from Foley & Smith, \$275, net 30 days.
5. Purchased from Bascom, Byers & Company, merchandise for Department B, \$5,742.28, 1/10—n/30. D. K. Davis, owner of the business, made an additional investment of \$8,000 cash.
7. Sold Fowler and Hoke on account, 1/10—n/30, Departments A, \$1,647.80; B, \$2,345.99.
8. Purchased shipping supplies (paper and twine) from Claypool Trading Corporation, 2/10—n/30, \$275.50.
11. Sold on account to Cohee and Company, 1/10—n/30, Departments A, \$455.82; B, \$965.71; C, \$755.43.
12. H. Clayton & Company returned goods purchased May 3, amounting to \$92.50, for which they were given credit.
13. H. Clayton & Company paid their account less the discount.
15. Purchased merchandise from Horne & Barclay, Inc., terms 2/10—n/30, as follows: Departments A, \$5,675.20; B, \$3,098.65; C, \$4,872.75.
Paid Bascom, Byers & Company account in full less the discount.
18. Paid the Bell Telephone Company for extra service charges, \$15.80.
20. Paid the Postal Telegraph Company \$19.65 for a cablegram.
21. Cohee and Company paid their account in full less the discount.
23. Gave Horne & Barclay, Inc., a 60-day, 6 per cent note dated May 23, in settlement of the amount owed to them.
26. Purchased office supplies, n/30, from C. L. Kant, \$102.70.
28. Fowler and Hoke gave a 30-day 6 per cent note dated May 27, in settlement of their account.
30. Paid \$120 cash to the Standard Typewriter Company for a new typewriter.
31. Paid monthly payroll to the following groups: truck drivers, \$175; salesmen, \$800; office clerks, \$750; officers \$500.
Sold Sullivan & Sons on account, 1/10—n/30, Departments B, \$1,856.09; C, \$2,438.31.
Purchased merchandise from Rohrbach & Company, 1/10—n/30, as follows: Department A, \$3,655.90; Department C, \$2,107.56.
Sold DuBarry & Mars Company on account, 1/10—n/30, Department A, \$471.06; Department C, \$1,152.10.
3. The Chicago Contracting Corporation had the following journals in use in their accounting system:
 - a. Cash Receipts: Date; Account and Explanation; Folio; Cash; Contract Income; General Ledger.
 - b. Cash Disbursements: Date; Check Payable To; Voucher Number; Check Number; Accounts Payable; Purchase Discount; Cash.

- c. Voucher Register: Date; Voucher Number; Payable To; Date Paid; Check Number; Accounts Payable; Material; Labor; Subcontracts; Truck Expense; Office Salaries; Sundry: Amount; Folio; Account.
- d. Contract Journal: Date; Name; Folio; Contracts; Uncompleted Contracts.
- e. General Journal: Accounts Payable; Contracts; General Ledger Folio; Account and Explanation; General Ledger; Contracts; Accounts; Payable.

Enter the following transactions in the proper journals:

19—

- June 1. Purchased brick from the Frankfort Brick Company, 1/10—n/30, \$6,855.20.
2. Paid Wabash R. R. Co. freight on brick, \$652.20 (charge to material cost).
3. Signed a contract with the city for repaving thirty blocks on East Marquette Road. Contract price, \$60,000.
5. Paid office rent, \$90, to J. L. Mahaffey.
7. Paid weekly payroll to laborers, \$5,854.20.
8. Received a check from the Lake Michigan Cottage Corporation for a completed job, \$59,875. (In addition to the entry in the cash receipts book, make an entry in the general journal debiting uncompleted contracts and crediting contracts. This reverses the entry made when the contract was received.)
10. Paid Frankfort Brick Company less the discount.
12. Purchased cement from the LaSalle Cement Company, 1/10—n/30, \$10,855.40.
13. Received bill from the River Garage for gasoline and truck repairs, \$156.18.
14. Paid payroll as follows: laborers, \$8,693.21; office force, \$956; drivers, \$850.
15. Received the following invoices all with terms n/30 from the Great Lakes Dredging Company for sand and gravel delivered to different jobs:

Invoice dated June 2.....	\$364.72
5.....	516.90
8.....	482.55
10.....	266.10
12.....	697.41

17. Paid Moline and Hammond for landscape-gardening work completed on a job, \$598.
19. Water bill paid to the Public Service Corporation, \$197.62.
21. Paid the weekly payroll to laborers, \$6,792.41.
23. Received lumber from G. H. Deeves Lumber Company for concrete form lumber, 1/10—n/30, \$4,672.90.
25. Received a check from the Michigan Avenue Garage in part payment of contract which is approximately one-half completed, amounting to \$49,650.

26. Signed a contract with the Mutual Mining Company for constructing a tippie and sinking a shaft, \$72,500.
27. Purchased time cards, timekeepers' books and pencils from the State Stationery Store, \$35.15, n/30.
28. Payroll made up and paid as follows: laborers, \$6,694.75; office force, \$925; truck drivers, \$360.50.
29. Paid Yarp & Lee, electrical contractors, for completed jobs, \$3,472.01.
30. Purchased cement from the Galena Cement Plant, for which a 60-day trade acceptance was signed for \$8,755.
Purchased three new trucks from the Caldwell Motor Car Company. Total purchase price was \$6,900. A down payment of \$900 cash was made, and a series of notes for equal amounts were given for the balance, one note being due the last day of each month for the next 12 months.

4. The journals to be used in recording the transactions in this problem are as follows:

Cash Receipts: Date; Account; Folio; Cash; Sales Discount; Accounts Receivable; Cash Sales; Hardware, Department A; Paint, Department B; Electrical Supplies, Department C; General Ledger.

Cash Disbursements: Date; Paid To; Voucher Number; Check Number; Cash; Purchase Discount; Accounts Payable.

Voucher Register: Date; Payable To; Voucher Number; Paid: Date and Check Number; Accounts Payable; Purchases: Hardware, A; Paints, Department B; Electrical Supplies, Department C; Freight In; Store Wages; Auto Expense; Office Expense; Freight Out; Drivers' Wages; Office Wages; Sundry: Amount; Folio; Account.

Sales Journal: Date; Customer; Folio; Accounts Receivable; Sales: Hardware, Department A; Paint, Department B; Electrical Supplies, Department C.

General Journal: Accounts Payable; Accounts Receivable; General Ledger; Folio; Account and Explanation; General Ledger; Accounts Receivable; Accounts Payable.

The general ledger accounts are as follows:

Cash	Purchases Electrical Supplies,
Notes Receivable	Department C
Accounts Receivable	Purchase Returns and Allowances
Railroad Claims	Freight In
Inventory Hardware, Department A.	Heat and Light
Inventory Paint, Department B	Auto Expense
Inventory Electrical Supplies, Department C	Office Expense
Prepaid Insurance	Store Wages
Store Fixtures	Auto Truck Drivers Wages
Advertising Fixtures	Office Wages
Office Equipment	Rent
Auto Trucks	Store Expense
Notes Payable	Dues and Subscriptions
	Freight Out
	Advertising

Accounts Payable	Telephone and Telegraph
Mortgage Payable	Postage
B. B. Lester, Capital	Interest Earned
O. R. Noco, Vendor	Purchase Discount
Sales Hardware, Department A	Rentals Received
Sales Paint, Department B	Loss on Sale of Capital Assets
Sales Electrical Supplies, Department C	Interest and Discount Paid
Sales Returns and Allowances	Sales Discount
Purchases, Hardware, Department A	Donations
Purchases Paint, Department B	Depreciation on Auto Truck
	Reserve for Depreciation on Auto Truck

In recording the transactions use only the names of those accounts which are listed above. Each entry in the general journal should be accompanied by a complete explanation, and a space should be left between each entry so as not to crowd the work. If any mistake is made in recording a transaction, adjust it by a correcting entry.

19—

- Oct. 1. B. B. Lester purchased the established business of O. R. Noco. To provide for the initial payment and necessary working capital, Lester deposited \$15,000 in the Keystone National Bank. The assets acquired included an inventory as follows: hardware, \$13,640.50; paints, \$3,100.16; electrical supplies, \$4,059.34; store fixtures, \$1,500; office equipment, \$500; auto truck, \$200. Payment was made by giving a check for one-half of the purchase price, and for the balance Lester's own promissory note for one year with interest at 6 per cent dated Oct. 1, and 6 per cent first mortgage on the merchandise and equipment as security in equal amounts.
Cash sales for the day amounted to \$150.50, divided as follows: Department A, \$110; Department C, \$40.50.
Purchased three tons of coal from the Penn Coal Company for heating purposes, on account \$19.75.
Paid rent \$100, to Ben Myfield.
2. Sold a bill of goods on account to the Capital Construction Company, A, \$231.13, n/30.
Cash sales: Department A, \$37.80; Department B, \$26.20; Department C, \$14.87.
Insurance was taken out on the stock of merchandise and fixtures for one year, amount of the premium being \$248. A bill for the insurance was received from J. C. Anderson.
3. Sold merchandise on account to G. C. Switzer, Department C, \$48.50; to C. L. Strouse, Department A, \$110.11; to T. D. Brown, Department B, \$138.35. Terms of each sale n/30.
Cash sales: Department A, \$75.50; Department B, \$50.50; Department C, \$28.21.
4. Cash sales: Department A, \$165.71; Department C, \$35.53.
Paid clerk's wages, \$33.33; truckman's wages, \$13.33.
6. Purchased miscellaneous office supplies from the Business Supply Company on account, \$25.34.

Hired a stenographer and bookkeeper at \$30 a week.

Received an invoice from the Corbin Lock Company for \$344.50, terms n/30. Goods not yet received.

7. Sold merchandise to Robb & Kline, Department B, \$325.99, 1/10—n/30. Bought a new tire for the delivery truck on account from the Auto Sales Company, \$15.20.
8. Cash sales for the last three days were as follows: Department A, \$365.52; Department B, \$156.17; Department C, \$3.83. Received shipment from the Corbin Lock Company which checked with the invoice received on the sixth. Department A to be charged.
Sold electrical supplies to H. D. Wood on account, \$68.86, terms n/30.
9. Goods received from Norvell-Shapleigh on account 2/10—n/30, \$454.40, Department A.
10. Purchased gasoline and oil for auto truck on account from the Gulf Oil Company, \$15.50.
Sold goods on account to the Builders Supply Company, 1/10—n/30, Department A., \$400; Department B, \$225.52.
11. Cash sales for the last three days totaled \$656.66, divided as follows: Department A, \$223.90; Department B, \$125.76; Department C, \$307.
Cash sales returned and a refund of \$22.50 was made, Department C.
Paid clerk's wages (full week) \$60; bookkeeper's wage (full week) \$30; truckman's wage (full week) \$20.
Mr. Lester also withdrew \$30 a week as a salary, one-half of which was to be divided to the Store Wage account and the other half to office wages.
13. Lester withdrew from stock for use in the store and office a mop bucket, mop, broom, duster and other supplies, the cost price of which was \$3.45. Repairs to auto truck amounted to \$15.20, for which the Schenley Garage sent a bill.
14. Sold goods to the Capital Construction Company on account, \$309.90, 1/10—n/30, divided departmentally as follows: Department A, \$200.90; Department B, \$59; Department C, \$50. Received from the General Hardware Company sundry hardware invoiced at \$5,496.69. Settlement was made by giving a check for \$2,000; a 6 per cent 60-day note dated Oct. 14, for \$2,000; and the balance on 30 days open account. Two per cent discount was allowed for the cash payment.
15. Purchased an adding machine from the Complex Company on account, 1/10—n/30, \$155.75.
Sold on account to Belmont & Cox electrical supplies amounting to \$140.77, 1/10—n/30.
16. Sold hardware to G. C. Switzer on account \$25.20, n/30.
17. The Home for the Aged was given \$25.
Lester joined the Hardware Dealers' Association, paying the yearly dues of \$16.
Robb & Kline paid their account in full.

18. Paid the account of Norvell-Shapleigh in full less the discount.
Paid weekly wages as follows: clerks, \$75; office, \$45; truckman, \$20.
Cash sales for the week: Department A, \$456.10; Department B, \$101.90; Department C, \$362.80.
The Builders Supply Company paid their account in full.
20. Sold hardware to the Sphinx Supply Company, \$480.12.
Terms 1/10—n/30, and f.o.b. destination.
Paid the freight on the shipment to the Wabash R. R. Co., \$7.27.
21. Received electrical supplies from Ronald & Company, \$885.58, 1/10—n/30.
Received a 30-day 6 per cent note dated Oct. 20, in settlement of account from T. D. Brown, for goods sold him on Oct. 3.
22. Paid freight to the B. & O. R. R. Co. on goods received Oct. 21. Amount, \$25.50.
Paid the Penn Coal Company in full.
23. Purchased 50 gallons oil for auto truck from Penn Oil Company, \$50, n/30.
Received an invoice from the Keystone Lumber Company for lumber to make additional shelves in the store, \$144.64.
24. Received electrical equipment from the N. Y. Electrical Supply Company, \$1,976.27, 1/10—n/30.
Paid \$3 for 1 year's subscription to the *Retail Hardware Dealers Association Magazine*.
Capital Construction Company paid their invoice which was billed to them on Oct. 14.
25. Paid weekly wages the same as on Oct. 18.
Paid J. C. Anderson's bill of Oct. 2.
Bought \$10 worth of postage.
Paid the Complex Company invoice.
C. L. Strouse paid \$100 on account.
Belmont & Cox paid their account in full.
Cash sales for the week were as follows: Department A, \$598.11; Department B, \$50.65; Department C, \$385.19.
27. Withdrew paint and varnish from stock to finish new shelves, the cost price of the material being \$6.40.
Received a shipment of paint from the Capital Paint Company, \$1,556.60. 2/10—n/30.
28. Paid freight bill on paint received to the B.R. & P. Rwy. Co., \$21.25.
29. Paid H. Ziegler for building shelves, \$99.90.
30. Sold Robb & Kline paints and supplies on account, Department B, \$261.88, 1/10—n/30.
Received a check from the Sphinx Supply Company paying their account in full.
31. Cash sales for Oct. 27 to 31, inclusive: Department A, \$441.10; Department B, \$75.20; Department C, \$250.10.
Received a bill from the *Morning Times* for October advertising, \$250.

Ronald & Company invoice paid in full.

Total each column in the journals, and show the proof of the totals in each journal.

Chapter XVI

1. J. P. Conley and L. N. Hoke were owners of a wholesale automobile accessory and radio business. The partners use the following books in their accounting system:

1. Books of original entry, with column headings as specified:

Sales Journal: Date; Account and Explanations; L. F.; Accounts Receivable; Sales, Accessories; Sales, Radios and Supplies.

Voucher Register: Date; Payable To; Voucher Number; Paid: Date, Check Number; Accounts Payable; Purchases, Accessories; Purchases, Radios and Supplies; Delivery Expense; Wages; Traveling Expense; Sundry: Debit; Credit; L. F.; Account.

Cash Receipts Journal: Date; Account and Explanation; L. F.; Cash; Sales Discount; Accounts Receivable; General Ledger.

Cash Disbursements Journal: Date; Paid To; Check Number; Voucher Number; Cash; Purchase Discount; Accounts Payable.

General Journal: Accounts Payable; Accounts Receivable; General Ledger; L. F.; Account and Explanation; General Ledger; Accounts Receivable; Accounts Payable.

2. Ledgers:

a. General Ledger

b. Subsidiary Ledger: Accounts Receivable

The general ledger contains the accounts as listed below with balances as shown by a proof trial balance prepared at July 1, 19—.

Inventory Accessories.....	\$23,500
Inventory Radios and Supplies.....	7,000
Cash.....	1,840
Accounts Receivable (control).....	4,020
Accrued Interest on Notes Receivable	
Delivery Truck.....	400
Store Furniture and Fixtures.....	800
Office Equipment.....	500
Accounts Payable (control).....	2,400
Accrued Wages.....	100
Accrued Interest on Notes and Mortgage Payable	
Mortgage Payable.....	5,000
Wages	
Reserve for Doubtful accounts	
Traveling Expense Accrued	
Notes Payable.....	3,000
J. P. Conley, Capital.....	16,760
L. N. Hoke, Capital.....	10,000
Reserve Depreciation Delivery Truck.....	300
Reserve Depreciation Store Furniture and Fix- tures.....	400
Reserve Depreciation Office Equipment.....	100

Notes Receivable
 Delivery Truck Expense
 Sales Returns and Allowances, Accessories
 Purchase Returns and Allowances
 Allowance on Delivery Truck
 Loss on Sale of Delivery Truck
 Miscellaneous Sales
 Interest Earned
 Salesmen's Traveling Expenses
 Rent
 Sales Discount
 Purchase Discount
 Purchases, Accessories
 Purchases, Radios and Supplies
 Sales, Accessories
 Sales, Radios and Supplies
 Depreciation Store Furniture and Fixtures
 Depreciation Office Equipment
 Depreciation Auto Truck
 Doubtful Accounts
 Interest Expense

The accounts receivable ledger contains accounts with the following balances:

R. B. Campbell.....	\$1,000.00
C. R. Caldwell.....	425.25
P. T. Powell.....	325.00
E. J. Normile.....	675.75
John Church.....	580.00
Radio Supply House.....	167.50
McLeod & Morris.....	562.50
J. H. Burgett.....	284.00
W. H. McDowell & Company	

\$4,020.00

The balance in the Accounts Payable control account represents the amounts owed to the following creditors:

Voucher number	Creditor	Amount
678	Shanklin Auto Supply Company	\$ 922.21
679	W. M. Shafer Distributing Co.	844.42
680	W. H. McDowell and Company	633.37
		<u>\$2,400.00</u>

Enter the amounts owed to the three creditors in the accounts payable column only of the voucher register, but do not include the amounts in the summary posting to the control account. These amounts represent balances owed prior to July 1, and are not transactions for the month of July. These three items are shown in the voucher register in order to have a record of the date they were paid.

INSTRUCTIONS

1. Open accounts in the general ledger and accounts receivable ledger, using the names of the accounts given above, and allow ten lines for entries under the caption of each account.
2. Enter in each account for which a balance is shown the amount under date of July 1, 19—, and set up the proof trial balance.
3. Journalize the following transactions in the proper books of original entry. Number July vouchers beginning with 700.
4. Post all current transactions immediately upon making the entry.
5. Summarize the various journals on July 31, and make the summary postings.
6. Prepare the adjusting entries and post to the ledger, except the closing inventory adjustments.
7. Prepare lists of both the accounts receivable and accounts payable, and prove with their respective control accounts in the general ledger at July 31.
8. Prepare a trial balance at July 31, 19—, after considering the adjustments.
9. Prepare a work sheet.
10. Profits and losses from operation are divided equally between the partners according to the partnership agreement.

TRANSACTIONS

- July 1. Sales of accessories on account to C. R. Caldwell, \$727.50; to John Church, \$66.60; to J. H. Burgett, \$22.85.
3. Received on account from R. B. Campbell, cash, \$500, and his 30-day 6 per cent note dated July 3, for the balance of his account.
5. Received bill from Wylie Garage for gas and oil for the delivery truck, \$30, which was paid this date. Paid Shanklin Auto Supply Company, less 1 per cent discount. Sales to P. T. Powell, on account \$796.80; accessories \$616.60; radios \$180.20.
8. John Church returns accessories for which we allow him credit of \$44.12.
10. Sales to McLeod and Morris on account, \$912; accessories \$800.50; radios \$111.50; Sales to E. J. Normile on account, \$156.65; accessories \$75; radios \$81.65.
12. C. R. Caldwell paid \$425.25, less 2 per cent discount.
15. Purchased radios on account from the Union Sales Company, \$950.50.
16. Paid rent of \$100 to Riggs Real Estate Company.
18. Paid wages for 2 weeks ending today, \$312 (\$100 of which was accrued on July 1). Received check from the Radio Supply House for \$176.50. Sales to E. J. Normile on account, radios \$255.20.
20. Purchased radios on account from W. M. Shafer Distributing Company, \$560.40. Purchased accessories on account from W. H. McDowell and Company, \$1,690.90. Sent a check to the

- Radio Supply House for \$9, overpayment of their account on the 18th. Paid W. M. Shafer Distributing Company amount owed at July 1, by cash \$444.42, and balance by a 30-day note at 6 per cent dated July 20.
22. W. H. McDowell & Company buys a quantity of radio supplies from Conley & Hoke, amount \$335.10, 2/10—n/30. Purchased an adding machine from J. Dalton & Company, \$143.30, 1/5—n/30. McLeod & Morris paid their balance of July 1, less 2 per cent. Paid wages \$230.
25. Received a check from E. J. Normile, amount \$675.75.
27. Sold radio supplies to R. B. Campbell on account, \$45.45. Also sold him one lot of old boxes for \$9.20, on account.
29. Paid the Dalton Company bill of July 22 less the discount. Purchased accessories on account from the Shanklin Auto Supply House, amounting to \$1,500.
30. W. H. McDowell and Company balance of July 1, \$633.37 is paid, less the amount of the bill of goods sold them on July 22. Both bills are subject to a discount of 2 per cent before payment. (Cancel voucher 680, and make a new voucher for the amount of the payment.)
31. A new delivery truck was purchased from the Pitt Auto Sales Company, costing \$525. They allowed \$75 on the old truck. Charge off one month's depreciation (\$8.33) on the old truck before determining the loss on the disposal of the asset. Sold scrap rubber for cash, amount \$12.50.

Adjustments, July 31, 19—

- | | |
|---|----------|
| a. Wages accrued..... | \$136.00 |
| b. Salesmen's traveling expenses accrued..... | 75.90 |
| c. Interest credited to checking account by the bank for month of July..... | 3.58 |
| d. Doubtful accounts to be charged off, one-half of 1 per cent of the charge sales | |
| e. Interest on notes receivable accrued..... | 2.33 |
| f. Interest on notes payable accrued..... | 1.33 |
| g. Interest on mortgage payable..... | 25.00 |
| h. Depreciation on store furniture and fixtures, 10 per cent per annum on cost. | |
| i. Depreciation on office equipment (depreciate new adding machine for a full month). 10 per cent per annum on cost. | |
| j. Depreciation on delivery truck (do not depreciate new truck for month of July), 25 per cent per annum on cost. | |
| k. Inventory of accessories, \$24,749.95; radios and supplies, \$8,360.05. (The inventory figures are to be used on the work sheet only. Make no adjusting entries for the inventory figures at July 31.) | |

2. From the following information prepare controlling accounts, indicating beside each posting the book of original entry from which it was posted, and show the balance in the controlling accounts.

Sales.....	\$22,500	Credit Given Customers	
Purchase Discount.....	166	for Cash Received.....	\$9,900
Sales Discount.....	180	Notes Payable Issued to	
Purchases.....	16,000	Creditors.....	8,000
Purchase Returns.....	200	Customers' Notes Dis-	
Uncollectible Accounts		honored.....	100
Charged off.....	250	Credit Received for Cash	
Notes Receivable from		Paid to Creditors.....	5,500
Customers.....	2,000	Sales Allowances.....	347

3. Make all of the postings to the general ledger accounts from the following totals appearing in the columns of the journals shown below. These amounts are summaries for the month of July, 19—. Also prepare a trial balance after the postings have been completed.

Cash Receipts Journal		Cash Disbursements Journal	
Cash.....	\$2,328.49	Cash.....	\$2,142.58
Sales Discount.....	24.01	Purchase Discount..	9.22
Accounts Receivable	1,340.00	Accounts Payable..	2,151.80
General Ledger (a)	1,012.50		
Sales Journal		Voucher Register	
Accounts Receivable...	1,218.15	Accounts Payable....	\$5,486.94
Sales, Hardware.....	769.15	Purchases, Hardware.	2,423.90
Sales, Electric Supplies	449.00	Purchases, Electric	
		Supplies.....	\$1866.90
		Store Expense.....	211.00
		Office Expense.....	200.00
		Sundry (b).....	785.14
General Journal			
Dr.			Cr.
\$1,619.12	Accounts Receivable	\$	879.22
1,267.35	Accounts Payable		593.30
9.20(c)	General Ledger		1,423.15(d)

The general ledger column totals, shown above, are composed of the following items:

- a. 1,012.50, original investment of Noel Blake.
 - b. 785.14, office equipment
 - c. 9.20, sales returns
 - d. { 1,267.35, notes payable
155.80, commissions earned
4. B. B. Lester problem continued:
- a. Set up general ledger accounts as listed in Problem 4, Chap. XV. Make the current postings and the summary postings to the general ledger and prepare a trial balance for the month of October.
 - b. Make the postings to the customers' ledger, and prove the balance in the Accounts Receivable control account in the general ledger.

- c. Prove the balance in the Accounts Payable control account in the general ledger.
- d. Continue recording the following transactions in the proper journals for the month of November.

19—

- Nov. 1. Cash sales in Department A amounted to \$766.87.
2. Paid wages as follows: clerks, \$75; office, \$45; truck driver, \$20. Purchased a new exterior store sign from the Electric Sign Company which cost \$550.
3. Sales on account to the Builders Supply Company, Department A, \$1,096.59, 1/10—n/30; J. C. Shanklin, Department B, \$441.56, n/30; Chas. Thomas, Department C, \$1,028.46, n/30. Received merchandise from the General Hardware Company, Department A, \$2,426.20, 1/10—n/30. Paid voucher to the New York Electrical Supply Company. Paid telephone bill for October to the Bell Telephone Company, \$3.50.
5. Electric light bill for October was paid to the Brilliant Light Company, \$20.32.
T. D. Brown bought electrical supplies on account, \$837.65, n/30.
6. Paid voucher to Capital Paint Company, invoice of Oct. 27.
7. Schenley Garage billed Lester for truck repairs, \$24.72; new inner tubes, \$4.80; and gasoline, \$22.10.
Purchased stationery for office use from the Beechwood Supply Company, \$42.60, n/30.
8. Cash sales for the week amounted to \$933.13, as follows: Department A, \$610.20; Department B, \$52.80; Department C, \$270.13.
Sold Capital Construction Company merchandise as follows: Department A, \$812.20; Department B, \$416.80; Department C, \$337.61, 1/10—n/30.
H. D. Wood gave his note for 30 days at 6 per cent dated Nov. 8, in settlement of his account.
Received check from Robb & Kline for goods purchased Oct. 30.
10. Capital Construction Company sent their check in settlement of bill of goods purchased Oct. 2.
Paid American Express Company \$2.25 express on shipment of radio supplies from the Reliance Radio Company, Inc.
12. Received invoice from the Reliance Radio Company, Inc., for \$1,165.30, n/30, Department C.
Builders Supply Company sent a check in payment of their account covered by invoice of Nov. 3.
14. Sold Blaw & Knox paint invoiced at \$642.82, n/30.
15. Wages for 2 weeks paid as follows: clerks, \$150; office, \$90; truckman, \$40.
Sent check to the Corbin Lock Company paying their account in full.

- Paid rent for the month to Ben Myfield, \$100.
 Cash sales for the week: total \$1,691.71: Department A, \$685.50; Department B, \$315.50; Department C, \$690.71.
17. Paid Business Supply Company account in full.
 Shipped Sphinx Supply Company hardware invoiced at \$1,865.55, n/30, prepaying the freight \$13.45, to the Wabash R. R. Co.
 Received shipment of merchandise from Corning & Company, invoiced at \$2,030.33, Department C.
18. Sold Builders Supply Company on account, 1/10—n/30, Department A, \$1,500; Department B, \$513.25; Department C, \$513.25.
 Received a check from Capital Construction Company for their purchase of Nov. 8.
19. Sold the following materials to Capital Construction Company, n/30: Department A, \$1,802.20; Department B, \$520.01; Department C, \$800.
 Sent check to the Penn Oil Company paying their account in full.
20. Mr. Lester enters into an agreement with Wm. Fry whereby Lester is to let one-half of the garage in the rear of the store for a monthly rental of \$15, payable in advance. The first month's rent was received.
 T. D. Brown paid his note due today.
21. Cash sales for the week amounted to: Department A, \$756.58; Department B, \$40.20; Department C, \$400.
22. Received a letter from the Sphinx Supply Company stating that the shipment made to them on Nov. 17 was entirely destroyed in a railroad wreck, and to duplicate the order at once. Duplicate shipment was made today, with the same terms as shown on the invoice of Nov. 17. Also prepaid the freight on this shipment to the Wabash R. R. Co., \$13.45.
24. Lester made a claim against the Wabash R. R. Co. for the loss, including both the amount of the invoice and the prepaid freight.
28. Sold merchandise to J. C. Shanklin, Department C, \$525.64, 1/10—n/30.
 Builders Supply Company paid their account covered by invoice of Nov. 18.
29. Cash sales for the week: A, \$652.10; B, \$100.00; C, \$225.17.
 Paid two weeks wages same as of Nov. 15.
 Lester decides to purchase a new delivery truck from the Main Sales Company since he can get an allowance of \$150 for the old car. The selling price of the new truck is \$725. The difference was paid in cash. The accumulated depreciation on the truck amounted to \$33.33.
30. Gave the General Hardware Company a 30-day 6 per cent note dated this date in settlement of their invoice of Nov. 3. (Cancel the voucher for this item.)

- a. Make all the current and summary postings to the ledgers for the month of November.
- b. Prove the control accounts.
- c. Prepare a trial balance at Nov. 30, 19—.
5. Make the postings from the journal and prepare a trial balance from the transactions which were recorded in problem 1, Chapter XV.
6. Same as above for problem 2, Chapter XV.
7. Same as above for problem 3, Chapter XV.

Chapter XVII

1. a. Record the transactions listed below in the voucher register of the Green Steel Tank Company, which contains the following columns:

Date
 Payable To
 Voucher Number
 Paid: Date and Check Number
 Accounts Payable
 Manufacturing Cost
 Distribution Expense
 Administrative Expense
 Sundry: Debit amount; Credit amount; Folio; Account.

- b. Also make a distribution of the vouchers in the voucher summary sheet having the following accounts:

<u>Manufacturing Cost</u>	<u>Distribution Expense</u>
Raw Material	Advertising
Direct Labor	Salesmen's Salaries
Indirect Labor	Delivery Expense
Freight In	Traveling Expense
Factory Supplies	Freight Out
Miscellaneous Factory Expense	<u>Administrative Expense</u>
Repairs to Plant	Office Salaries
Light and Power	Office Supplies
	Telephone and Telegraph
	Officers' Salaries
	Dues and Subscriptions

- c. Make the postings from the summary sheet to the operating ledger at July 31, 19—.
 - d. Make the postings from the voucher register to the general ledger.
 - e. Prove the balance in each of the three expense control accounts.
- 19— Voucher Number
- July 2. 7000 Galena Chemical Company, 2/10—n/30, one barrel cutting compound, \$52.50.
3. 7001 American Express Company, express charges on valves shipped to customers, \$14.76.

5. 7002 Office Supply Company, net 30 days, carbon paper, paper clips, ink and pencils, \$25.98.
6. 7003 Pitt Office Equipment Company, net 30 days, one adding machine, \$259.
7. 7004 100,000 pounds of $\frac{1}{4}$ -inch steel plates from the United Steel Corporation, 1/10—n/30, \$9,000.
7. 7005 Freight bill from the P. R. R. Compay on carload steel plates, \$357.18.
9. 7006 East End Sheet Metal Company, bill for roof repairs to building, \$119.60, net.
11. 7007 Forged Steel Rivet Corporation, 40,000 pounds rivets, 1/10—n/30, \$1,000.
11. 7008 P & L. E. R. R. Co., freight bill on rivets for \$56.48.
12. 7009 Pelican Printing Company, 10,000 time cards, net 30 days, \$25.
14. 7010 Bowman and Brown, 50 pounds of rosin \$20, and 200 feet $\frac{3}{8}$ -inch belt lacing \$5, net 30 days.
16. 7011 Pure Paint Company five barrels red lead and ten barrels pitch black paint, \$1,500, 1/10—n/30.
17. 7012 B. R. P. Railway Company, freight bill on 15 cases valves, \$62.20.
18. 7013 Triangle Garage, repair bill for trucks, net 30 days, \$147.20.
19. 7014 Globe Valve Company, brass valves, 2/10—n/30, \$947.25, with a freight allowance of \$62.20.
20. 7015 Payroll for the first 2 weeks as follows:

Direct labor.....	\$3,947.20
Indirect labor.....	426.75
Salesmen's salaries.....	1,200.00
Office salaries.....	560.00
Officers' salaries.....	1,000.00

21. 7016 The *Steel Age* rendered a bill for one year's subscription to a trade magazine, \$4.50, net.
23. 7017 The Tower Advertising Company, invoice for advertising space amounted to \$216.20, net.
23. 7018 Oakland Ice Company, ice for first two weeks in July for factory water coolers, \$10.60 net.
- 7019 Salesmen's expenses, July 1-15, \$225.40. (Check drawn in favor of cashier.)
24. 7020 Akron Sheet Plate Mill, 75,000 pounds, $\frac{3}{8}$ -inch sheet steel, \$7,500, 1/10—n/30.
25. 7021 Freight bill from the P. & L. E. R. R. on plates, \$201.72.
27. 7022 Henry Swain, bill for \$14.75 net, for "Safety First" bulletin board to be used in shop.
28. 7023 *Pittsburgh Press*, bill for \$7.82 net, for running advertisement for machinists and laborers.
30. 7024 Faust Fuel Company, invoice for one ton blacksmith coal, \$18.75 net.

31. 7025 Bell Telephone Company, service for July, \$36.90 net.
 31. 7026 Allegheny Power Company, power for July, \$216.22 net.
 31. 7027 Western Union Telegraph Co., service for July, \$18.66 net.
 31. 7028 Kokomo Red Mill, Inc., invoice for 50,000 pounds of $\frac{1}{2}$ -inch, $\frac{3}{4}$ and $\frac{7}{8}$ -inch round iron, \$1,250, 1/10—n/30.
 31. 7029 Atlantic Refinery, invoice for 500 gallons gasoline for delivery trucks \$90 net.
 31. 7030 Payroll for last 2 weeks, July as follows:

Direct labor.....	\$3,769.90
Indirect labor.....	401.10
Salesmen's salaries.....	1,200.00
Office salaries.....	550.00
Officers' salaries.....	1,000.00

31. 7031 Washington Machine Company, invoice for one turret lathe \$2,750, 1/10—n/30.

2. The Keystone Iron and Steel Company, Ltd., just organized, makes use of the following books in their accounting department:

1. Voucher Register: Date; Voucher Number; Payable To; Payment: Date and Check Number; Accounts Payable; Purchase Discount; Manufacturing; Trading; Administrative; Sundry Dr.; Sundry Cr.; L. F.; Account and Explanation.

2. Voucher Summary Sheet.

3. Cash Receipts Book: Date; L. F.; Cash Debit; Sales Discount; Accounts Receivable; General Ledger.

4. Check Register: Date; L. F.; Account and Explanation; Check Number; Voucher Number; Cash Credit; Accounts Payable.

5. General Journal: Accounts Payable; General Ledger; L. F.; Account and Explanation; General Ledger; Accounts Payable.

6. General Ledger.

7. Operating Ledger.

The transactions occurring during the month of October, 1925, are shown below. Journalize the transactions, make the current and summary postings, and take a trial balance as of Oct. 31, 19—.

- Oct. 1. Through an agreement with the West Bank Iron Company, which recently ceased operations, A. F. Alguire, E. A. Ross, and W. C. Miller, leased the plant for a period of five years. The new organization is a limited partnership, Mr. Miller not being a general partner. The investments of the partners are:

A. F. Alguire.....	\$100,000 cash
E. A. Ross.....	50,000 cash
E. A. Ross.....	50,000 personal note for 1 year dated to- day with interest at 6 per cent.
W. C. Miller.....	200,000 cash

The terms of the lease provide for a yearly payment of \$100,000, in advance on the first day of each October for 5 years. A voucher was made up and paid for \$100,000.

2. Received 500 tons coke @ \$3.50 a ton, as covered by the Westmoreland Coke Company's invoice of Sept. 26, terms, 1/10—n/30. Vouchered and paid freight bill on coke to P. & L. E. R. R. Company, \$126.70.
3. Received invoice dated Oct. 2, for 1,000 tons iron ore @ \$2.50 a ton from Superior Ore Company. Terms, 1/15—n/30.
5. Purchased and received from Pitt Office Supply Company the following items, listed on their invoice of Oct. 3, terms, 2/10—n/30, on the furniture only:

Stationery and office supplies.....	\$ 25.90
3 Office desks @ \$45.....	135.00
7. Received bill from Vesta Machine Company for repairs to cranes and hoists, \$548.70.
8. Created a petty cash fund of \$100.
Received 3,000 tons of iron ore from Duluth Mining Company, as covered by their invoice of Oct. 1, \$8,250, n/30.
9. Received ore as covered by invoice of Oct. 2, from Superior Ore Company. Paid freight on ore bill for payment to Pennsylvania R. R. Company, \$414.87.
9. Received bill from *Ore and Iron Dealer Magazine* for advertising for month \$146.25, net 30 days.
10. Received invoice from the Southern Quarries Company for 200 tons of limestone @ \$6 a ton, n/30. The cars were unloaded yesterday.
11. Payment of voucher to Westmoreland Coke Company within discount period overlooked. The invoice was supposed to have been paid within 10 days of the date of the invoice. A new voucher was made up for the gross amount of the invoice, and the old one was cancelled. Purchased auto truck from Mack Sales Company, \$3,500, n/30. Received a bill from the Rex Realty Company for \$200, covering rent for finished goods warehouse for which a voucher was made up and paid this date.
13. Received two carloads of coal, the invoice for same being received yesterday from Penn Collieries Company, dated Oct. 10, \$450, 1/10—n/30.
One of the desks received from Pitt Office Supply Company was returned to them as it was not needed. A new voucher was made up and paid for the balance due them.
15. Payroll made up and vouchered as follows:

Direct labor.....	\$2,090.77
Indirect labor.....	106.45
Superintendent.....	250.00
Office clerk's salary.....	200.00
Salesmen's salaries.....	600.00

17. Paid voucher to Superior Ore Company.
Employees paid today.
19. Received two carloads manganese ore from the Importers Company, \$2,157.39, 1/10—n/30. Invoice dated Oct. 18.
20. Passed voucher for payment and paid the Penn Collieries.
23. Received 1,000 tons coke from Westmoreland Coke Company, @ \$3.75 a ton, 1/15—n/30. Invoice dated Oct. 20.
Received six cars limestone from the Three Rivers Quarry Company. Invoice dated Oct. 19, \$1,900, 1/15—n/30.
25. Paid voucher to Northern Surety Company for bill received today, covering insurance on delivery truck for 1 year, \$25.
26. One carload ore received on Oct. 19. tested below standard, and a letter was received today requesting it to be returned, and a credit memo was also received for \$1,019.57. Gave Westmoreland Coke Company a note for their invoice of Sept. 26. Note dated Oct. 26 for 30 days at 6 per cent.
28. Received invoice from Montour Mining Company for three carloads coal \$710. Invoice dated Oct. 25, 2/10—n/30. Coal was received on Oct. 27.
Paid voucher to Importers Company.
31. Received bill from Pennsylvania Power Company for power furnished to Oct. 28, \$323.47, 10 days net. Reimbursed petty cash for the following items paid since Oct. 8:

Advertising for workmen.....	\$ 5.50
Ice for water coolers in plant.....	15.45
Gas and oil for delivery truck.....	15.50
Office supplies.....	20.47
Telegrams.....	6.70
Repairs to adding machine.....	8.50
First-aid supplies for factory use.....	20.75

Make an analysis of the Purchase Discount account.

Total the columns in each of the journals and make all postings to the general ledger. Prepare a trial balance. Also show the proof of the balances in the control accounts.

3. Use the following journals in recording the transactions listed below, which occurred in a small manufacturing plant.

- a. Voucher register having a discount column.
- b. Check register having no discount column.
- c. General journal.

19—

- July
1. Received machinery from the Boyd Lathe Company, costing \$5,000, 2/10—n/30. Freight on the machinery amounting to \$80 also paid to the C. I. & L. R. R..
 2. Created a petty cash fund of \$200.
 6. Purchased and received an auto truck from the Dodge Brothers local agency, the purchase price being \$1,200. Paid \$200 cash and gave a 60-day 6 per cent note dated today for the balance.

8. Received raw materials from the Bell Manufacturing Company, invoice being for \$950, 1/10—n/30.
9. Paid factory payroll, \$850.20.
11. Paid the invoice of Boyd Lathe Company, taking the discount.
12. Some of the goods purchased from the Bell Manufacturing Company checked below standard. The goods were returned by automobile, and a credit memorandum was received for \$75.
14. Raw material was received from the Scott Manufacturing Company, invoiced at 2/10—n/30, amounting to \$800.
15. Received a bill from the Excello Garage for repairs to auto truck and for gasoline purchased, amounting to \$60.
18. Supplies for use in the factory were received from the Iowa Supply House, amounting to \$70, n/30.
19. Paid one-half of the amount owed to the Scott Manufacturing Company. Discount was deducted on the amount paid, and the balance was to be paid in 30 days.
22. Paid the Excello Garage invoice of July 15.
26. Paid the Iowa Supply House.
30. Paid off the note which was given to Dodge Brothers, thus saving the interest for the balance of the 60 days.

Total the columns of each of the journals and make all postings to the Accounts Payable control account. Show the proof of the balance in this control account.

4. Enter the transactions listed below in the journals in which they properly belong. The journals to be used are as follows:

- a. Voucher register containing a purchase discount column, and a raw material control column.
- b. Check register.
- c. General journal.

19—

- Nov. 1. Received an invoice from the Swinney Supply Company for 10,000 No. 754-B castings which were unloaded today. Invoice amount, \$8,476.83, 2/10—n/30.
2. Invoices from Factory Supply Company were checked with receiving slips and approved for voucher: ten barrels lubricating oil, \$500; five barrels cutting compound, \$200; four bales of waste, \$310, 1/10—n/30. A credit memorandum for \$92.50 was also taken into consideration when these invoices were vouchered.
3. Received 10,000 $\frac{1}{2} \times 4$ -inch machine bolts from the Bay State Bolt Company, \$468.50, 1/10—n/30.
4. Received 500 kegs of cut washers, 100 kegs each size $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, and 1 inch, from the Wisconsin Washer & Nut corporation, \$4,000. 1/10—n/30.
5. Received a carload No. 1 common yellow pine lumber, 1 $\times$ 12 inches $\times$ 16 feet, 18,544 board feet at \$65 a thousand feet, 2/10—n/30. Invoice from Edward Hines Lumber Company.
12. Paid the Factory Supply Company in full.

14. Paid one-half of the amount owed to the Wisconsin Washer & Nut Corporation.
20. Failed to pay the Bay State Bolt Company in time to take the discount. Make the proper adjustment, considering payment not made at this date.
25. Returned 2,540 board feet lumber to the Edward Hines Lumber Company for which they allowed credit at the purchase price. We also paid the freight of \$23.55 to the I. C. R. R. Co. on the lumber returned, which was deducted from the voucher that was paid today.
30. Gave Swinney Supply Company a 60-day note with interest at 6 per cent in settlement of account.

Present the Accounts Payable control account fully posted, and prove the balance shown therein. Also present the Purchase Discount account fully posted with the balance shown.

5. Record the following transactions in a voucher register with a purchase discount column, and in a check register as the occasion requires:

- a. Received an air compressor from the Louisville Machine Company. Invoice amount, \$765.50, 2/10—n/30. Freight paid on the compressor to the P. & W. V. R. R. Company, amounting to \$17.20.
- b. A credit memorandum for \$138.20 was received from Baker & Miller for raw materials received which were damaged in transit some months ago. Two invoices, not affected by the above credit, were to be vouchered for payment today to the same firm. The invoices totaled \$1,472.18, less 1 per cent discount which was deducted. The credit memorandum was also deducted from the total payable.
- c. Payment of a voucher previously entered in the voucher register made up in favor of Maxwell & Ferguson for \$1,960, with a \$40 discount deduction, was delayed and the discount was lost. Prepare a voucher for payment of the full amount of the invoice, payment being made today.
- d. An invoice for \$2,356.90, 1/10—n/30, from Marshall & Reed for factory supplies received, had been previously entered in the voucher register. Payment of one-half of the amount is made today, which is within the discount period, and the balance is to be paid in 30 days.

Chapter XVIII

1. Select the product of some industry and trace its development through its successive stages of raw materials, work in process, and finished goods from both the technical and accounting viewpoints.

2. List 20 manufacturing overhead expense items and state which are variable and which are non-variable.

Chapter XIX

1. The National Nail Corporation at the close of their fiscal year, June 30, 19—, had the following items in their inventory:

90,000 kegs of nails (cost to produce) \$90,000; market value, \$95,000; sales value, \$135,000.

5,000 kegs of nails (cost when purchased in the market) \$5,500; cost to produce, \$5,400; market value, \$5,300; sales value, \$7,500.

At what price should the inventory be shown in the financial statements at the above date?

2. *a.* Outline a plan for taking a physical inventory that will insure the valuation being as accurate as it is possible to make it.

b. If the book value of the perpetual inventory does not agree with the physical inventory value, how is the variance reconciled?

c. Show the entries to be made if the book value is greater than the physical inventory value; if the book value is less than the physical inventory value.

3. Show how a control would be established over raw materials if the following transactions took place in a manufacturing business.

Aug. 1. Received six dozen No. 2 round, short-handled shovels (stock item No. 955) from the Sheridan Shovel Corporation. Amount of invoice, \$108, 1/10—n/30.

2. Received from the Verona Steel Company the following items covered by their invoice, with terms of 2/10—n/30:
12 dozen hand picks, B/P No. 8472, @ \$24 dozen, \$288 (item 956).

1 dozen crowbars, B/P No. 8509, @ \$20 dozen, \$20 (item 957).

3. Received 1,000 feet $\frac{3}{4}$ -inch Manila rope (item 546) from the Rocker Rope Company, \$50, 1/10—n/30.

4. Received from the Alhambra Steel Company the following round head steel rivets, invoiced at 1/10—n/30;

10 kegs (2,000 pounds) $\frac{5}{8} \times 2$ inches @ \$0.03 pound...\$60 (item 317)

15 kegs (3,000 pounds) $\frac{3}{4} \times 2\frac{1}{2}$ inches @ \$0.035 pound...\$105 (item 325)

5 kegs (1,000 pounds) $\frac{7}{8} \times 3$ inches @ 0.04 pound...\$40 (item 334)

15. Received a requisition for 2 doz. 955 shovels for use on construction job G57.

16. Received 5 dozen lantern frames (item 610) from the Franklin Lantern & Torch Company, 1/10—n/30, @ \$9 a dozen. Paid express on the shipment to the American Express Company, \$5.

17. Received a requisition for 100 feet $\frac{3}{4}$ -inch rope (546) for job F98.

18. Issued 450 pounds rivets, item 317, and four kegs rivets, item 325, for job G26.

19. Issued two dozen picks (956) and three crowbars (957) for job G13.

20. Received 12 dozen ruby lantern globes (stock item 708) from MacBeth Glass Company, @ \$5 a dozen, 2/10—n/30. Also paid express on the globes to the American Express

Company, \$4.10. Show the proof of the balance in the Stores control account.

4. The Gem City Electric Construction Company maintained a modern storeroom in which all supplies were kept. All materials were under the supervision of a general storekeeper, whose employees carefully checked in and out every item. A record was also kept of the price of all items received, and the materials issued on requisitions were carefully priced.

The following record appears on the stock card for No. 14 rubber covered, single strand, copper wire:

<u>Received</u>	<u>Issued</u>
Jan. 1. Balance on hand, 3,500 feet @ \$0.0085 a foot.	Jan. 15, 2,500 feet.
30. 5,000 feet @ \$0.0095 a foot.	Jan. 25, 500 feet.
	Jan. 31, 3,000 feet.
	Feb. 15, 500 feet.
	Feb. 28, 1,000 feet.
Mar. 16. 10,000 feet @ \$0.01 a foot.	Mar. 20, 3,500 feet.
	Mar. 31, 2,500 feet.
Apr. 28. 20,000 feet @ \$0.008 a foot.	May 1, 10,000 feet.
	June 15, 10,000 feet.
July 19. 10,000 feet @ \$0.01 a foot.	July 30, 10,000 feet.
Aug. 10. 10,000 feet @ \$0.009 a foot.	Aug. 15, 12,000 feet.
	Oct. 25, 2,000 feet.
Nov. 2. 5,000 feet @ \$0.01 a foot.	

Use the moving average method of pricing to establish the value of the wire to be shown on the perpetual inventory card at the end of each month and at Nov. 2. Also show in your record the quantities received and issued and on hand at the end of each month.

5. State how the shortage of stores inevitably occurs despite the careful checking of all materials into and out of the storeroom. This shortage may be accounted for in what manner? Show the necessary entries.

6. The first-in, first-out method of pricing the inventory of tires and tubes was in operation in a tire concern. The stock record card for the 30 × 5.25-inch ballon tires showed the following information:

<u>Received</u>	<u>Issued</u>
January 60 @ \$8.50 each	January 48
February 80 @ 8.25 each	February 60
March 100 @ 8.00 each	March 75
April 120 @ 8.10 each	April 82
May 160 @ 7.90 each	May 90
June 140 @ 8.00 each	June 110

Prepare a form which will show clearly the inventory value at the end of each month.

Chapter XX

1. The Better Bookcase Company manufactured bookcases and office furniture. A trial balance at Aug. 31, 19—, was composed of the following items:

Cash.....	\$ 3,850.65	
Accounts Receivable (control).....	42,455.16	
Stores (control).....	20,694.08	
Inventory Finished Goods.....	5,691.08	
Machinery and Equipment.....	89,237.19	
Reserve for Depreciation, Machinery and Equipment.....		\$ 20,871.10
Office Fixtures.....	1,083.75	
Reserve for Depreciation, Office Fixtures..		495.55
Accounts Payable (control).....		17,952.06
Interest Accrued.....		150.00
Mortgage Payable.....		15,000.00
Capital Stock.....		100,000.00
Surplus.....		8,046.66
Sales.....		234,827.90
Sales Returned.....	2,585.58	
Manufacturing Cost (control).....	196,755.13	
Trading Expense (control).....	18,623.07	
Administrative Expense (control).....	13,987.52	
Interest Expense.....	600.00	
Sales Discount.....	1,780.06	
	<u>\$397,343.27</u>	<u>\$397,343.27</u>

a. The following transactions took place during the month of Sept.' 19—. Record the transactions in the voucher register, and in the voucher distribution summary sheet. Also show the operating ledger for the month of September.

Sept. 1. Invoice and lumber received from Southern Poplar Association, \$9,675.50, 1/10—n/30.

2. Freight on above lumber paid to P. & L. E. R. R. Company, \$482.07.

3. Invoice from National Hardware Company covering screws, brads, and door rollers, \$756.45, 2/10—n/30.

4. Rent for the month, \$300, paid to Knox Realty Company. Apportion 60, 30 and 10 per cent, respectively, to manufacturing, trading, and administrative expenses.

5. Invoice from Pilgrim Printing Company for stationery delivered, \$82.75, net 30 days.

6. Salesmen reimbursed for traveling expenses, \$465.90.

7. Bill received from Consumers Company for power consumed during month, \$180.48, net.

8. Payroll made up as follows:

Direct labor..... \$5,495.10

Indirect labor..... 890.00

Salesmen's salaries..... 1,200.00

Office salaries..... 820.00

Executives' salaries..... 1,800.00

9. Received bill from *Literary Digest* for advertising space, \$475.50.

10. Purchased from the Chicago Supply House, small tools invoiced at \$1,986.73 (capitalize this item).

b. Prepare general journal entries for the following adjustments to be considered at Sept. 30, 19—:

Depreciation on machinery and equipment.....	\$743.60
Depreciation on office fixtures.....	9.03
Interest accrued on mortgage.....	75.00

Raw materials costing \$7,980.56, were requisitioned from the stores department for use in production.

A summary of other transactions for the month of September was as follows:

Sales on account.....	\$22,390.70
Cash received from customers.....	31,855.84
Discounts allowed customers.....	796.55
Vouchers paid.....	20,697.83

c. Set up the necessary accounts in the ledger, make the postings, and prepare a trial balance at Sept. 30, 19—.

2. Select some industry with which you are familiar and enumerate the various expense divisions within it.

a. Show in what manner control accounts are set up for each division.

b. Itemize the detailed expense accounts necessary under each division.

3. Globe Glass Company set:

1. Make a complete explanation for each entry in the general journal. Except in the general journal, do not use more than one line for each entry and explanation. Fill in every line in the sales journal, cash receipts journal and check register.

2. In case of errors made in journalizing, adjust by correcting entries in the general journal. Do not scratch out the incorrect entry or amount, and do not rewrite the correct amount or account above or below the erasure.

3. A schedule of the accounts used in this problem is given on the following page, which is to be referred to in working the problem. Use only the account captions that are given in the schedule.

4. Rule correctly and balance each individual accounts receivable account at the end of the month.

5. The books to be used are:

a. Columnar books of original entry:

1. General Journal.....	pages J1-J6
2. Sales Journal.....	page S1
3. Cash Receipts Journal.....	page R1
4. Check Register.....	page D1
5. Voucher Register.....	pages V1-V3

b. Ledgers:

1. General Ledger
2. Customers (Accounts Receivable)
3. Operating Ledger

c. Auxiliary Records:

1. Voucher Distribution and Summary Sheets.

a. Manufacturing Cost.

b. Distribution Expense.

c. Administrative Expense.

2. Equipment Register (to show the following):

a. Name of equipment account.

b. Date of purchase of each unit.

c. Cost of each unit.

d. Total cost of like units.

e. Depreciation rate on like units.

f. Yearly depreciation charge on like units.

g. Monthly depreciation charge on all units.

h. Total yearly depreciation charge on all units, charged to the equipment account.

i. Total monthly depreciation charge on all units charged to the equipment account.

Arrange the accumulated depreciation in such a manner that it can be readily summarized to give the balance to be shown in the general ledger account Reserves for Depreciation.

6. The column headings of the various books of original entry, reading from left to right, are as follows:

a. General Journal: Administrative Expense; Distribution Expense; Manufacturing Cost; Accounts Payable; Accounts Receivable; General Ledger; Ledger Folio; Account and Explanation; General Ledger; Accounts Receivable; Accounts Payable; Manufacturing Cost; Distribution Expense; Administrative Expense.

NOTE: Individual journal vouchers may be substituted for this general journal.

b. Sales Journal: Date; Account and Explanation; Ledger Folio; Accounts Receivable; Sales: Fruit Jars; Glasses; Bottles; Food Jars; Speciality Ware.

c. Cash Receipts Journal: Date; Account and Explanation; Ledger Folio; Cash; Sales Discount; Accounts Receivable; General Ledger.

d. Check Register: Date; Payee; Voucher Number; Check Number; Folio; Cash; Purchase Discount; Accounts Payable.

e. Voucher Register: Date; Payable To; Voucher Number; How Paid: Date, Check Number; Folio; Accounts Payable; Manufacturing Cost; Distribution Expense; Administrative Expense; Sundry: Debit Amount, Credit Amount, Ledger Folio, Account.

7. Open the following accounts in the general ledger, placing four accounts to the page (ten lines for each account) unless exception is noted:

Cash

Accounts Receivable (control)

Inventory, Raw Materials

Inventory, Finished Ware

Inventory, Supplies

Reserve for Taxes

Reserve for Furnace Relining

Mortgage Payable

Reserve for Doubtful Accounts

Prepaid Insurance	Reserves for Depreciation (Control)
Organization Expenses	Unissued Capital Stock
Land	Capital Stock
Buildings (one-third page)	Surplus
Melting Tanks (one-half page)	Sales, Fruit Jars
Lehrs	Sales, Glasses
Machinery	Sales, Bottles
Small Tools	Sales, Food Jars
Molds and Dies	Sales, Specialty Ware
Machine-shop Equipment	Sales Returns and Allowances
Conveyor	Manufacturing Cost (control)
Railroad Siding	Distribution Expense (control)
Auto Trucks	Administrative Expense (control)
Office Equipment	Doubtful Accounts
Patents	Interest Expense
Notes Payable	Sales Discount
Accounts Payable (control)	Purchase Discount
Interest Accrued on Notes and Mortgages Payable	Manufacturing Account
Reserve for Compensation Insurance	Distribution Account
	Administration Account
	Profit and Loss

8. Accounts to be opened in the voucher distribution and summary sheet are as follows:

a. Manufacturing Cost

Sand	Miscellaneous Manufacturing Expense
Soda	Insurance on Plant Building and Machinery
Lime	Experimental and Research
Feldspar	Compensation Insurance
Arsenate of Soda	Furnace Relining
Glass Cullet	Depreciation on Auto Trucks
Fruit Jar Cap Wires	Depreciation on Buildings
Fruit Jar Rubbers	Depreciation on Melting Tanks
Purchase Returns and Allowances	Depreciation on Lehrs
Freight and Cartage In	Depreciation on Machinery
Direct Labor	Depreciation on Molds and Dies
Indirect Labor	Depreciation on Machine Shop Equipment
Repairs Plant and Equipment	Depreciation on Railroad Siding
Fuel Oil	Depreciation on Patents
Gas	Taxes
Power	Auto Expense
Amortized Operating Expense	
Containers and Paste	
Packing Labor	

b. Distribution Expense

Amortized Operating Expense	Depreciation on Conveyor
Taxes	Depreciation on Auto Trucks

Auto Expense
Salesmen's Salaries
Insurance on Warehouse

Depreciation on Railroad Siding
Depreciation on Buildings
Compensation Insurance

c. Administrative Expense

Office Expense
Postage
Office Salaries
Amortized Operating Expense

Depreciation on Office Equipment
Officers' Salaries
Compensation Insurance

Chapter XXI

1. The Trenton Construction Company has a fleet of 15 automobile trucks. The trucks are depreciated on the basis of 4 years' useful life and the straight line method. From the following information prepare a record that will show the monthly depreciation charge for the calendar year up to Aug. 31, 1930:

Truck number	Date of purchase	Cost
37	June 1, 1926	\$3,250
38	July 1, 1926	3,640
39	Mar. 1, 1927	4,000
40	Mar. 1, 1927	4,000
41	Mar. 1, 1927	4,000
42	Mar. 1, 1927	4,000
43	Mar. 1, 1927	4,000
44	Apr. 1, 1928	3,750
45	Apr. 1, 1928	3,750
46	Apr. 1, 1928	3,750
47	July 1, 1929	3,000
48	July 1, 1929	1,800
49	Jan. 30, 1930	3,600
50	May 1, 1930	3,600
51	July 1, 1930	4,000

Enumerate the advantages of this type of a record.

2. A manufacturing concern making sheet metal novelties has the following machines in operation. Monthly financial statements are prepared, and the books are closed annually at Dec. 31.

Machine number and name	Date purchased	Cost	Depreciation rate
			per annum, per cent
No. 3 Cutting Machine	Jan. 1, 1926	\$ 5,000.00	10
No. 4 Trimming Machine	July 1, 1927	6,500.00	12½
No. 9 Stamping Machine	Oct. 1, 1928	15,550.00	15
No. 15 Heat Treating Unit	Apr. 1, 1929	30,690.10	10
No. 20 Pressing Machine	Jan. 1, 1930	20,475.50	20

Prepare:

- a. General ledger account to show the cost of the machines.
- b. Auxiliary records for each of the five different machines, showing the connection with the control account.
- c. Depreciation reserve account, showing the balance at June 30, 1930.

Show how the balance in the reserve account ties in with the equipment record.

3. Globe Glass set continued:

19—

Mar. 1. The Globe Glass Company was organized as a corporation to manufacture and sell glassware. The corporation was authorized this date to issue 3,000 shares of common stock with a par value of \$100 a share. All of the authorized capital stock was issued in return for cash, other assets, and services fairly valued as follows:

2,100 shares sold for cash at par value.

300 shares issued for patents to be used in production.

500 shares given in exchange for a plot of land appraised at \$20,000, on which was located a building adaptable to the requirements of a glass house.

100 shares given to the promoter of the enterprise.

The incorporation fees paid the state amounted to \$630.

15. Books of account were purchased from Given and Campbell, terms, n/30, \$53.88.
16. The transactions mentioned under the date of Mar. 1 were entered in the proper journals.
18. Bill received from the Empire Engineering Company for remodeling and repairing the building, terms n/30 days; amount \$2,856.92.
20. Received three carloads of brick covered by an invoice from the Frankfort Brick Company, amount \$1,108.52, terms 2/10—n/30 days. These bricks were used for the building of the walls of two glass-melting tanks. Freight on the shipment was paid to the B. & O. R. R. Company, \$287.40. \$120 cartage charges paid to the Thompson Transfer Company.
21. The Boone Builders Supply Company delivered 50 sacks of cement and 8 yards of sand, covered by an invoice amounting to \$287.40, terms 1/10—n/30. This material was used in the erection of the melting tanks.
22. Received two carloads of fire brick from the Reading Clay Products Company, for use in lining the glass tanks. Invoice amount \$1,962.73, terms n/30 days. Freight paid to the Pennsylvania R. R. Company, \$287.52. Cartage charges paid to Thompson Transfer Company, \$97.50.
23. Purchased a five-ton truck from the Keystone Auto Sales Company, paying cash, \$2,950. A check for the license, \$44, (50 per cent manufacturing, and 50 per cent distribution) was sent to the Department of Highways. Payroll paid for the period ended Mar. 15, was as follows:

Labor in erecting tanks.....	\$847.82
Office salaries (stenographer).....	37.50
Night watchman (charge to Building account)	50.00
Superintendent (charge to Building account)....	150.00
Officers' salaries.....	500.00

25. Paid Newall and Nunn, attorneys, for their services as follows:

Incorporation fees.....	\$300
Transferring title and deed to real estate. (Divide in proportion to land and building valuations).....	50

26. The B. & O. R. R. Company completed the installation of a railway siding at a cost of \$1,452 in accordance with the terms of a contract with them. The bill was payable 90 days from date.

27. Received 10M board feet of 3 × 12-inch oak plank for use in building material shed. Invoice from Long Leaf Lumber Company, \$500, f.o.b. plant, terms 2/10—n/30.

28. Received a bill from Hardie Hardware Company for three kegs 60d nails used in constructing material bins, \$7.50, net 30 days.

29. Received four pressing machines from the Mohler Machine Works. Invoice \$48,000, terms n/30. Freight paid to B. & O. R. R. Company, \$826.42.

30. Received an invoice from Penn Office Equipment Company, which was paid this date covering the following:

1 Typewriter.....	\$125
1 Adding machine.....	350
10 Office desks @ \$65.....	650
2 Office desks @ \$125.....	250
12 Office chairs @ \$10.....	120
1 Office safe.....	365
6 Steel file cabinets @ \$30.....	180

Invoice received from Boone Builders Supply Company for the following material, terms 1/10—n/30:

10 Sacks cement.....	\$ 25	} Used in building foundations for four presses.
2 Yards gravel.....	20	
3 Yards sand.....	36	
100 Sacks cement.....	250	} Used in building lehrs.
20 Yards sand.....	240	

Paid invoice of Frankfort Brick Company.

31. Received four carloads brick from the Latrobe Clay Products Company to be used in building lehrs. Invoice \$1,756.82, terms 2/10—n/30. The freight was paid to the B. & O. R. R. Company, \$372.66.

Paid Boone Builders Supply Company invoice of Mar. 21. Payroll for the last half month ended Mar. 31, payable Apr. 6, as follows:

Labor in erecting tanks.....		\$956.42
Office salaries:		
Stenographer.....	\$37.50	
Record keeper.....	<u>75.00</u>	112.50
Night watchman } (charge equally to melting		50.00
Superintendent } tanks and machinery).....		150.00
Officers' salaries.....		500.00
Labor in setting up presses.....		382.55
Labor in building storage sheds.....		166.43
Labor in building lehrs.....		442.58
Truck driver (50 per cent manufacturing; 50 per		
cent distribution).....		25.00

Prepare the summary postings and a trial balance at Mar. 31.

Chapter XXII

1. Visit some industrial establishment in your community and obtain all the information possible about their payroll system. Write a report showing the internal check in operation, and clearly outline or chart the accounting control involved.

2. Classify the following as to direct labor and indirect labor in a gear and pinion plant working primarily on individual job orders:

- | | |
|-------------------------------|---------------------------------|
| <i>a.</i> Laying out work | <i>n.</i> Chipping and filing |
| <i>b.</i> General inspection | <i>o.</i> Factory payroll clerk |
| <i>c.</i> Setting up work | <i>p.</i> Riveting and bolting |
| <i>d.</i> Cutting | <i>q.</i> Cranemen |
| <i>e.</i> Turning and boring | <i>r.</i> Watchmen and gatemen |
| <i>f.</i> Timekeepers | <i>s.</i> Assemblymen |
| <i>g.</i> Milling | <i>t.</i> Sweepers |
| <i>h.</i> Foremen | <i>u.</i> Elevatormen |
| <i>i.</i> Drilling | <i>v.</i> Shafting repairmen |
| <i>j.</i> Store clerks | <i>w.</i> Material checkers |
| <i>k.</i> Reaming and tapping | <i>x.</i> Janitors |
| <i>l.</i> Grinding | <i>y.</i> Gang laborers |
| <i>m.</i> Cost clerks | <i>z.</i> Superintendent |

Would there be any reason for not including *f*, *j*, *m*, *o*, or *w* under manufacturing cost? Under what other department or departments might they be placed? State your reason.

3. The semi-monthly payrolls for a foundry for the month of June were as follows:

	June 1 to 15	June 16 to 30
<i>Melting:</i>		
Breaking Scrap Iron.....	\$415.90	\$496.72
Loading Charging Cars.....	685.88	715.11
Pushing Cars.....	556.77	584.92
Weighing.....	355.90	362.71
Elevator Operators.....	356.00	356.62
Charging.....	495.18	509.75
Cupola Melters.....	550.60	579.84
Slagmen.....	285.71	306.34
Ladle Operators.....	402.98	416.85
	<u>\$4,104.92</u>	<u>\$4,328.86</u>
<i>Molding:</i>		
Molders and Helpers.....	\$1,692.10	\$1,857.73
Molding Machine Operators.....	956.18	1,292.45
Pouring.....	1,011.92	1,307.29
Shaking Out.....	456.78	465.43
Cutting Sand.....	111.75	92.52
	<u>\$4,228.73</u>	<u>\$5,015.42</u>
<i>Coremaking:</i>		
Coremakers and Helpers.....	\$ 956.72	\$ 754.80
<i>Cleaning and Shipping:</i>		
Cleaning.....	\$355.80	\$406.92
Chipping.....	126.40	167.25
Weighing and Marking.....	150.00	150.00
Inspecting.....	225.00	225.00
Boxing.....	159.80	196.65
Loading and Blocking.....	355.42	410.15
	<u>\$1,372.42</u>	<u>\$1,555.97</u>
<i>Foundry Management:</i>		
Superintendent and Assistants.....	\$600.00	\$600.00
Foremen.....	500.00	500.00
Timekeepers.....	125.00	125.00
Store Clerks.....	175.00	175.00
	<u>\$1,400.00</u>	<u>\$1,400.00</u>
<i>Yardmen and Repairmen:</i>		
Cleaning Windows.....	\$166.90	\$172.10
Cleaning Yard.....	156.40	86.25
Oilers and Shafting Repairmen.....	142.85	147.66
Watchmen.....	100.00	100.00
Cranemen.....	250.00	250.00
	<u>\$816.15</u>	<u>\$756.01</u>
Total Payroll.....	<u>\$12,878.94</u>	<u>\$13,811.06</u>

Under the following conditions what entries would be made for:

- a. Recording authority for payment of the payroll?
- b. Payment of the payroll?
- c. Distribution of the payroll to the labor expense accounts?

1. When the accounting system contained a voucher register with a payroll column, but no expense-control columns. The general ledger contained the detailed labor accounts as itemized above.

2. When the accounting system contained a voucher register with the following columns which were affected by the payroll: direct labor, and manufacturing overhead expense. A voucher distribution and summary sheet was also in use.

4. The wage tickets of the machine tenders, employed by the Modern Machine Works, for the week ended July 15, showed the following number of hours worked:

		Workmen				
19—		Number 52	Number 53	Number 54	Number 55	Number 56
July	1	8	8	8	8	8
	2	8	8	9	9	8
	3	10	9	8	8	8
	4	—	8	—	4	4
	5	8	8	9	9	8
	6	4	4	4	4	4
(Sunday)	7	—	—	8	—	8
	8	8	8	8	8	8
	9	9	8	8	8	8
	10	8	8	8	8	8
	11	8	9	9	9	8
	12	8	8	9	9	10
	13	4	4	4	4	4
	14	—	—	—	—	—
	15	8	8	8	8	8

All of the time was devoted to direct production.

The rates per hour paid to each of the workmen were as follows: No. 52, 90 cents; No. 53, \$1; No. 54, 75 cents; No. 55, 80 cents; No. 56, 90 cents.

Eight hours constituted a regular working day. Time and one-half was paid for overtime, and double-time for holidays. A deduction of \$1 for group insurance was made each time the payroll was prepared. Workman No. 54 had withdrawn \$10 on July 3.

Prepare:

- a. Payroll sheet showing wages due each workman.
- b. Entry to record the authorization for drawing the money for the payroll, and providing for the deductions.

5. Globe Glass set continued:

Apr. 1. Received invoice (terms n/30) covering seven motors from the Westinghouse Electric Company for the following purposes.

Two for operating presses, \$600 each.

- Two for operating lehrs, \$400 each.
 One for operating storage conveyor, \$300.
 One for operating circulating air fan, \$200.
 One for operating air compressor, \$350.

The motors were received.

2. Received three carloads of silica sand from Blair County Silica Company which were unloaded in the storage bins.
 Invoice \$909.50, terms 2/10—n/30.
 Freight on sand paid B. & O. R. R. Company, \$156.44.
3. An invoice dated March 11 was received from the Stanwix Steel Company for steel used in constructing framework of the glass tanks. Amount \$854.22, terms n/30. This price was f.o.b. the Globe Glass Company plant.
4. Received a statement from Good's Garage, itemized as follows (50 per cent manufacturing; 50 per cent distribution):

20 Gallons gasoline.....	\$4.00	
8 Quarts oil.....	2.40	
Repairs to carburetor.....	4.50	\$10.90

5. Paid employees for the last half of March.
6. Paid Long Leaf Lumber Company's invoice of Mar. 27.
8. Received invoice (terms n/30) from the Pitt Machine and Equipment Company for the following items:

For Use in Machine Shop	1 Air compressor.....	\$ 856.22
	2 Circulating air fans.....	654.00
	4 Sets carrying out equipment for four presses...	3,950.00
	1 Complete automatic conveyor system for carrying ware from packing room to storage house.....	\$ 4,856.25
	1 Turret lathe with motor.....	1,116.00
	1 Screw lathe with motor.....	625.00
	1 Drill press with motor.....	729.50
	1 Grinding and polishing machine with motor.....	210.00
	1 Boring machine with motor.....	1,456.00
	1 Planer, with motor.....	1,375.70
		<u>\$15,828.67</u>

The above items were bought f.o.b. Globe Glass Company plant.

9. Paid Boone Builders Supply Company's invoice of Mar. 30.
10. Received carload lots of each of the following materials:
 Sun Sodium Works, 100 tons soda 2/10—n/30.
 Freight, \$476.90..... \$2,050.66
 Lincoln Lime Company, 90 tons lime 2/10—n/30. Freight, \$266.40..... 3,660.72
 Jeannette Glass Company, 60 tons glass 2/10—n/30. Freight, \$140.42 cullet..... 319.69
 Miller Supply Company, 2/10—n/30.

Freight \$55.46 (\$52.82 feldspar; \$2.64 soda).
Freight bills paid on the above shipments to the B. & O. R.
R. Company by one check.

11. A contract was let to the Best Construction Company on Mar. 1, for building a concrete machine shop. The machine shop was completed today and the Globe Glass Company accepted the structure which cost \$8,000. One-third of the space of the machine shop is used for the tool room. A check was written for one-half of the amount and a 6-month note with interest at 6 per cent was given for the balance. Note dated Apr. 11.

13. Received one lot of small tools which were placed in the toolroom. Invoice from the Union Tool and Supply Company, \$1,256.36, terms n/30.

Paid the following invoices:

Stanwix Steel Company, invoice dated Apr. 3.

17. Received the following material which was checked with the invoices:

Acme Printing Shop...Production forms	110.82, n/30
---------------------------------------	--------------

jars, f.o.b., Globe Glass	
Plant	6,548.90, 2/10—n/30

Cardboard Carton Co. 500,000 knocked-down cartons for packing finished ware	5,000.00, 2/10--n/30
---	----------------------

Paid Empire Engineering Company bill of Mar. 18.

Chapter XXIII

1. The following accounts are typical of those found in an ice-manufacturing plant. Work out a classification code which will satisfy all the requirements of a good code system.

Asset Accounts:

Cash in Bank
 Cash on Hand (Petty Cash)
 Notes Receivable
 Notes Receivable Discounted
 (offset)
 Accounts Receivable
 Reserve for Doubtful Accounts
 (offset)
 Ice Inventory
 Real Estate
 Plant Building
 Plant Machinery and Equip-
 ment
 Machine Shop Equipment
 Storage House Building
 Storage House Machinery
 Tools (ice tongs)
 Horses
 Wagons
 Harness
 Stable and Garage
 Motor Trucks
 Gasoline Pump
 Ice Houses (distribution centers)
 Scoring Machine
 Automobiles
 Office Furniture and Fixtures
 Ammonia
 Calcium
 Gasoline
 Mortgage Expense Prepaid
 Insurance Prepaid
 Taxes Prepaid
 Vehicle Licenses Prepaid
 Mortgage Expense Unamortized
 Interest Prepaid
 Wagon Repairs Deferred
 Truck Repairs Deferred

Liabilities and Capital Accounts:

Notes Payable
 Accounts Payable
 Ice Coupons Outstanding

Dividends Payable
 Interest on Notes Payable
 Interest on Mortgage Payable
 Water Rental Accrued
 Power Accrued
 Accountants and Legal Fees
 Accrued
 Mortgage Payable
 Bonds Payable
 Reserve for Taxes
 Reserve for Depreciation
 Preferred Capital Stock
 Common Capital Stock
 Surplus

Manufacturing Accounts:

Ammonia
 Calcium
 Water
 Wages
 Power and Light
 Coal
 Oil
 Waste
 Packing
 Shop Supplies
 Petty Factory Expense
 Taxes
 Insurance
 Depreciation
 Repairs to Buildings
 Repairs to Compressors
 Repairs to Pipe Lines
 Repairs to Motors
 Repairs to Brine Tanks
 Repairs to Condensors
 Miscellaneous Repairs

Distribution Accounts:

Wages, Platform
 Wages, Truck Drivers
 Truck Maintenance
 Gasoline and Oil
 Grease
 Tires and Tubes

Rentals	Taxes
Garage Expense	Legal and Accounting
Accessories	Rentals
Miscellaneous Truck Expense	Depreciation
License	Directors' Fees
Truck Repairs	Janitor's Supplies and Wages
Wages, Wagon Drivers	Trade Papers and Association
Horse Feed	Dues
Shoeing, Horse	Manager's Expenses
Harness Repairs	Donations
Veterinary Services	Advertising
Rentals	Miscellaneous Expenses
Vehicle Licenses	<i>Storage House Accounts:</i>
Miscellaneous Stable Expense	Wages
Stable Wages	Repairs
Miscellaneous Wagon Expense	Taxes
Wagon Repairs	Insurance
Ice Purchased	Depreciation
Telephones	Miscellaneous
Collecting and Soliciting	<i>Income Accounts:</i>
Insurance	Sales
Taxes	Discounts and Allowances on
Rentals	Sales
Advertising	Miscellaneous
Depreciation	Sales of Junk, etc.
Scoring Machine Expense	Interest Earned
Doubtful Accounts	Bad Accounts Collected
Coupon Books and Stationery	Discounts on Purchases
<i>Administrative Accounts:</i>	Gain from Sale of Capital Assets
Salaries—Officers	<i>Incidental Expense Accounts:</i>
Salaries—Clerks	Donations
Office Supplies	Interest Expense
Telephones	Mortgage Expense
Insurance	

2. Prepare a code classification for the following accounts to be used in a plant manufacturing tractors.

<i>Asset Accounts:</i>	Investments
Office Fund	Materials and Supplies
Washington Trust Co., Wash- ington	Finished Parts
Continental Trust Co., Chicago	Manufacturing (Work in Process)
Union Trust Co., Indianapolis	Finished Product
Mellon Nat'l Bank, Pittsburgh	Consigned Stock
Accounts Receivable—Trade	Accounts Receivable—Personal
Installments Receivable	Salesmen's Personal
Trade Acceptance Receivable	Notes Receivable—Personal
Notes Receivable—Trade	Accounts Receivable in Suspense
	Cash Value on Insurance Policies

Accruals Receivable
 Land
 Buildings
 Machinery and Equipment
 Tools
 Auto Equipment
 Dies
 Patterns
 Office Equipment
 Unexpired Insurance
 Prepaid Advertising
 Prepaid Carrying Charges
 Prepaid Sales Convention
 Expense
 Other Prepaid Items
 Prepaid Salesmen's Expense
 Patents
 Trademarks

Liability Accounts:

Accounts Payable
 Salesmen's Accounts Payable
 Notes Payable—Banks
 Notes Payable—Trade
 Trade Acceptances Payable
 Dividend Payable
 Accrued Wages
 Accrued Commissions (salesmen)
 Accrued Interest
 Accrued Taxes
 Memorandum Sales
 Accrued Bonuses
 Other Accrued Items
 Unclaimed Wages

Reserve Accounts:

Contingencies
 Buildings
 Machinery and Equipment
 Tools
 Auto Trucks
 Dies
 Patterns
 Office Equipment
 Patents
 Bad Accounts
 Inventory Adjustments
 Loss on Memorandum Ship-
 ments
 Loss on Salesmen's accounts

Capital Accounts:

Common Stock
 Surplus Earned
 Capital Surplus
 Profit and Loss

Income Accounts:

Gross Sales
Deductions from Sales
 Returns and Allowances
 Commissions Paid
 Cost of Sales

Expenses:

Selling Expenses:

Advertising—Direct
 Advertising—Journals
 Advertising—Show Expense
 Advertising—Special Campaign
 Advertising—Other
 Advertising—Art Work
 Freight, Express and Postage
 Convention Expense
 Installation and Repairs
 Printing
 Prize Contests
 Service
 Salaries—Salesmen
 Salaries—Office Proportion
 Sundry Selling Expense
 Traveling Expense—Salesmen
 Welfare
 Bonus
 Association Memberships and
 Dues

Shipping Expense:

Auto Truck—Operation
 Auto Truck—Maintenance
 Salary—Shipping Clerk and
 Helpers
 Shipping Supplies
 Sundry Shipping Expense
 Welfare

Administrative Expense:

Appraisals and Audits
 Bonus—Office
 Books and Periodicals
 Collections and Exchange
 Credit Inquiries

Depreciation—Office Building
 and Equipment
 Heat, Light and Water
 Insurance—Compensation
 Insurance—Fire
 Insurance—Life
 Janitors Expense
 Legal Expense
 Postage and Revenue Stamps
 Office Supplies
 Patent Expense
 Repairs—Office Building and
 Equipment
 Salaries—Officers
 Salaries—General Office
 Subscriptions and Dues
 Sundry Administrative Expense
 Taxes—Local
 Taxes—Franchise
 Taxes—Bonus
 Telephone and Telegraph
 Traveling Expense—General
 Welfare
 Credit Insurance

Income Credits:

Discount Earned
 Interest Earned
 Royalties Received
 Carrying Charges Received
 Bad Accounts Collected
 Miscellaneous Income

Income Charges:

Discount Allowed
 Interest Paid
 Carrying Charges Paid
 Bad Accounts
 Royalties Paid
 Contingencies
 Miscellaneous Deductions
 Special Experimental Expense
 Research Laboratory Expense
 Federal Taxes
 Donations

Direct Material Used:

Foundry Department
 Machine Department
 Assembly Department
 Finishing Department

Direct Labor:

Foundry Department
 Machine Department
 Assembly Department
 Finishing Department

Overhead Expenses:

Foundry Department:

Auto Truck—Operation and
 Maintenance
 Purchasing Dept., Salary and
 Expense
 Bonus
 Cost Office—Salary and Expense
 Defective Material and Work
 Depreciation
 Engineer's Salary and Expense
 Experimental
 General Expense
 General Labor
 Heat, Gas and Water
 Inspection
 Insurance—Compensation
 Insurance—Fire
 Power and Light—Purchased
 Repairs to Building
 Repairs to Equipment
 Supplies Used
 Taxes
 Welfare
 Inbound Freight
 Fire Inspection
 Methods and Standards
 Department
 Tool Room, Wages and Expense

Machine Department:

Auto Truck—Operation and
 Maintenance
 Purchasing Dept., Salary and
 Expense
 Bonus
 Cost Office—Salary and Expense
 Defective Material and Work
 Depreciation
 Engineer's Salary and Expense
 Experimental
 General Expense
 General Labor
 Heat, Gas and Water

Inspection	Taxes
Insurance—Compensation	Welfare
Insurance—Fire	Inbound Freight
Power and Light—Purchased	Fire Inspection
Repairs to Building	Methods and Standards
Repairs to Equipment	Department
Supplies Used	Tool Room, Wages and Expense
Taxes	
Welfare	<i>Finishing Department:</i>
Inbound Freight	Auto Truck—Operation and
Fire Inspection	Maintenance
Methods and Standards	Purchasing Dept., Salary and
Department	Expense
Tool Room, Wages and Expense	Bonus
<i>Assembly Department:</i>	Cost Office—Salary and
Auto Truck—Operation and	Expense
Maintenance	Defective Material and Work
Purchasing Department, Salary	Depreciation
and Expense	Engineer's Salary and Expense
Bonus	Experimental
Cost Office—Salary and	General Expense
Expense	General Labor
Defective Material and Work	Heat, Gas and Water
Depreciation	Inspection
Engineer's Salary and Expense	Insurance—Compensation
Experimental	Insurance—Fire
General Expense	Power and Light—Purchased
General Labor	Repairs to Building
Heat, Gas and Water	Repairs to Equipment
Inspection	Supplies Used
Insurance—Compensation	Taxes
Insurance—Fire	Welfare
Power and Light—Purchased	Inbound Freight
Repairs to Building	Fire Inspection
Repairs to Equipment	Methods and Standards
Supplies Used	Department
	Tool Room, Wages and Expense

3. A contracting company is engaged in general building construction, road building and paving, the manufacture of concrete products, and sale of fuel, lumber and building supplies. They wish to install an accounting system whereby they will be able to determine their monthly operating costs by departments and divisions. You are requested to prepare an account classification code that will materially aid in the distribution of the various expenses, keeping in mind the necessity for simplicity. The departments and divisions are as follows:

Fuel Yard
Lumber Yard

Lumber Mill

Other building construction materials and expense divisions:

Road Building Materials	Machine Shop
Concrete Products Plant	Selling Expense
Power House	General and Administrative
Garage	Expense

The accounts required to record the operating expenses in the various departments and divisions are as follows:

Raw Materials	Veterinary Services and Supplies
Direct Labor	Horseshoeing
Indirect Labor	Horse Feed
Fuel	Gasoline, Oil and Waste
Power Purchases	Licenses
Heat and Power	Rent
Water	Taxes, Real Estate
Repairs to Buildings	Taxes, Mercantile
Repairs to Machinery and Equipment	Garage Expense
Repairs to Motor Trucks	Machine Shop Expense
Insurance, Buildings	Advertising
Insurance, Equipment	Legal and Accounting Expense
Insurance, Compensation	Traveling Expense
Insurance, Group	Telephone and Telegraph
Depreciation, Buildings	Office Expense and Supplies
Depreciation, Equipment	Salaries, Executives
Depreciation, Motor Trucks	Salaries, Salesmen
Depreciation, Livestock	Salaries, Office

4. Prepare a code classification for the accounts used in the Globe Glass Company problem.

5. Globe Glass set continued:

Apr. 18. Received bill from Shaw and Sons for fire insurance policies issued for a period of 3 years for the following coverage:

	Premium
Plant building.....	\$818.78
Machine shop.....	96.00
Warehouse and equipment.....	418.82
Machinery in plant.....	946.88
Machinery in machine shop.....	106.55
19. Purchased for cash the following:	
Postage stamps and envelopes.....	\$ 30.75

Paid invoices for all goods received Apr. 10.

Sold Hayward and Spray one carload jelly glasses, invoiced at \$1,865.70, 1/10—n/30.

21. Paid invoice of Reading Clay Products Company dated Mar.

22. Sold Pop Products Company one carload pop bottles, invoiced at \$1,906.98, 1/10—n/30.

23. Sold to Tri-States Distributing Company three carloads fruit jars, invoiced at \$2,586.50, 1/10—n/30.

Received invoice from the Para Rubber Company covering 10,000 gross rubber jar rings, \$3,600, terms 1/10—n/30. Paid freight bill on same to Pennsylvania Railroad Company, \$54.92. Payroll made up and paid today for the first half of April as follows:

Labor in erecting tanks.....	\$1,898.17	
Labor in setting up presses.....	695.08	
Labor in building lehrs.....	1,783.47	
Labor in fan installation.....	172.75	
Labor in conveyor installation.....	2,047.82	
Labor in machine shop installation...	967.83	
Labor in installation of carrying-out equipment.....	1,468.19	
Labor in building storeroom.....	569.04	
Labor in fitting up toolroom.....	416.50	
Truck driver.....	50.00	
Office salaries:		
Stenographer.....	\$37.50	
Record keeper.....	75.00	112.50
Night watchman.....		50.00
Officer's salaries.....		500.00
Superintendent.....		150.00
Assistant superintendent.....		100.00
Salesmen's salaries.....		300.00
Indirect labor.....		210.59

23. Received carload lime from Lincoln Lime Company, 2/10—n/30, \$1,850. Freight paid to B. & O. Railroad Company, \$135.13, which was supposed to have been paid by the shipper.

24. Hayward and Spray returned defective glasses for which credit was given them, amounting to \$167.18.

Received two carloads silica sand from Blair County Silica Company, \$616.80, terms 2/10—n/30. Freight paid to B. & O. Railroad Company, \$76.16.

26. Sold five carloads fruit jars to Buckeye Grocery Company, invoiced at \$5,650.70, 1/10—n/30.

27. Sold to Johnson Brothers, terms 1/10—n/30:

1 Carload jelly glasses.....	\$1,548.52
3 Carloads fruit jars.....	2,286.66
	\$3,835.18

Sent a check to the Mohler Machine Company in payment of their invoice of Mar. 29.

29. Sold Wisconsin Cheese Company two carloads cheese jars invoiced at \$2,756.19, 1/10—n/30.

Sold Prairie Preserving Company one carload jam and pickle jars invoiced at \$1,952.88, 1/10—n/30.

Hayward and Spray paid their invoice of Apr. 19.

Returned 200 gross defective rubber jar rings to Para Rubber Company, express collect.

30. Pop Products Company paid their invoice of Apr. 21.

May 1. Payroll for the last half month ended Apr. 30, payable May 7, was as follows:

Officers' salaries.....	\$ 500.00
Truck driver.....	50.00
Stenographers.....	75.00
Record keeper.....	75.00
Clerks.....	300.00
Night watchman.....	150.00
Superintendents.....	250.00
Salesmen's salaries.....	300.00
Pressers.....	1,755.40
Mixers.....	240.00
Sweepers, material unloaders and laborers doing miscellaneous jobs.....	605.15
Storekeeper.....	150.00
Machinists.....	275.60
Toolroom attendants.....	150.00
Packers and stackers.....	378.18
Production and research engineer.....	220.00

2. Received gas bill from Manufacturers Heat and Light Company, applicable to April production, \$1,897.02, net.

3. Received bill from Consumers Light and Power Company, covering power used in April, \$1,172.56.

Received statement from Good's Garage for gasoline, oil and repairs for the month of April, amounting to \$52.26.

6. L. L. Phelps and W. S. Bowser enter into a partnership agreement on Oct. 13, 19—, for the purpose of manufacturing a new type of radio upon which Mr. Bowser has just received a patent. The firm will operate under the name of "The Renown Radio Company," and will engage in the manufacture of sets, and the distribution of radio parts and other accessories in addition to the manufactured sets. The partnership agreement also contained the following provisions:

1. Profits and losses were to be divided equally, and all profits were to be retained in the business for the first 3 years. At the end of the 3 years a new agreement is to be made up in respect to this clause.

2. The partnership is to continue in operation for a period of 5 years, unless by mutual agreement it shall be terminated.

3. Mr. Phelps is to have active charge of sales and office administration. Mr. Bowser is to act as production manager and superintendent.

4. Both partners are to draw monthly salaries of \$250. Mr. Phelps' monthly salary is to be divided equally between the distribution and the administration departments. The partners are to be paid twice monthly.

5. Withdrawals of cash over the salary allowance are to be considered as a reduction of capital and are to be charged with interest at the rate of 6 per cent per annum.

6. Any temporary loans to the business by the partners are to receive interest at the rate of 6 per cent per annum.

7. Monthly financial statements are to be prepared and the books are to be closed at Dec. 31, of each year.

The journals and other forms of original entry to be used in recording the transactions in this problem are as follows:

- a. Journal Voucher: A separate voucher, as illustrated in Chap. XV, is to be made up for each entry, the nature of which would require that it be placed in a general journal if one were in use.
- b. Petty Cash Book: This book is to be used only as a memorandum of petty cash payments. The form is as follows: Receipts: Date and Amount. Payments Date Explanation; Petty Cash Cr.; Factory Expense; Cleaning; Postage; Office Expense; Telephone and Telegraph; Express and Freight In, Stores; Express and Freight In, Accessories; Express and Freight Out; Delivery Expense; Advertising; Sundry: Amount, Folio, Account.
- c. Cash Receipts Book: Date; Account and Explanation; Folio; Cash; Sales Discount; Accounts Receivable; Cash Sales; General Ledger.
- d. Check Register: Date; Paid To; Voucher Number; Check Number; Cash; Accounts Payable.
- e. Sales Journal: Date; Customer; Folio; Accounts Receivable; Cash Sales; Sales of Sets: Style A; Style B; Style C; Accessories; Service.
- f. Voucher Register: Date; Voucher Number; Creditor; Paid: Date and Check Number; Accounts Payable; Purchase Discount; Stores; Direct Labor; Manufacturing Overhead Expense; Distribution Expense; Administrative Expense; Accessories; Sundry: Amount, Folio, and Account.

The ledgers to be used in this problem are as follows:

- a. General Ledger: Set up the following accounts in this ledger, placing four accounts to the page:

Cash	Reserve for Depreciation, Auto
Petty Cash	Truck
Notes Receivable	Reserve for Depreciation, Office
Accounts Receivable	Equipment
Advances to Salesmen	Reserve for Depreciation, Store
Inventory Stores	Fixtures
Inventory Work in Process	Reserve for Depreciation,
Inventory Finished Sets	Machinery
Inventory Accessories	Mortgage Payable
Interest Accrued on Notes	L. L. Phelps, Capital
Receivable	L. L. Phelps, Personal
Prepaid Advertising	W. S. Bowser, Capital
Prepaid Insurance	W. S. Bowser, Personal

Inventory Delivery Supplies	Sales, Style A
Inventory Office Supplies	Sales, Style B
Advertising Fixtures	Sales, Style C
Building	Sales, Accessories
Land	Sales, Service
Auto Truck	Sales Returns and Allowances,
Office Equipment	Sets
Store Fixtures	Sales Returns and Allowances,
Machinery	Accessories
Small Tools	Stores
Patent Rights	Purchases, Accessories
Notes Payable	Freight In Accessories
Accounts Payable	Direct Labor
Notes Receivable Discounted	Manufacturing Overhead Ex-
Accrued Payroll	pense
Accrued Interest on Notes Pay-	Distribution Expense
able	Administrative Expense
Salesmen's Commissions Accrued	Interest on Notes Receivable
Reserve for Taxes	Purchase Discount
Reserve for Compensation Insur-	Sales Discount
ance	Interest and Discount Expense
Reserve for Doubtful Accounts	Doubtful Accounts
Reserve for Depreciation, Ad-	Interest on Mortgage Payable
vertising Fixtures	Manufacturing
Reserve for Depreciation.	Distribution
Building	Administration
	Profit and Loss

Work out a code system for numbering the above accounts and place the account number to the left of each account caption in the ledger. In planning your code classification, make provision for coding the detailed stores items and expense accounts which are controlled by the general ledger accounts.

- b.* Stores Ledger: Prepare your own form, incorporating all of the necessary columns so that the information pertaining to the perpetual inventory may be summarized with a minimum of work. The stores ledger items are as follows:

Mica-Ite, No. 14SSC Wire, No. 20SCC Wire, No. 22SCC Wire, White Ash, Basswood, No. C76 Variable Condensers, No. A221 Fixed Condensers, No. D92 Dials, No. S167 Sockets, No. R86 Rheostats, No. 606T Tubes, Mahogany Stain, Walnut Stain, 2½" Brass Hinges, ¾" No. 16 Flat Head Brass Screws.

- c.* Customers Ledger:

- d.* Voucher Summary and Distribution Sheets for the following:

1. Manufacturing Overhead Expense
2. Distribution Expense
3. Administration Expense

- e.* Operating ledger for summarizing the monthly charges made to the expense control accounts.

The accounts necessary to record the manufacturing overhead expense items are as follows:

Indirect Labor	Repairs to Machinery
Light and Power	Compensation Insurance
Oil, Waste, and Compounds	Gas
Repairs to Buildings	Miscellaneous Factory Expense
Insurance on Buildings	Taxes
Depreciation, Buildings	Cleaning
Depreciation, Machinery	Superintendence
Amortization, Patent Rights	Warehouse Rent
Experimental Research	

The distribution expense accounts are as follows:

Delivery Expense	Warehouse Rent
Commissions	Salesmen's Salaries
Express and Freight Out	Traveling Expenses
Depreciation, Advertising Fix- tures	Service Department Salaries
Depreciation, Auto Truck	Advertising
Depreciation, Store Furniture	Repairs to Auto Truck
Insurance on Finished Goods	Insurance, Auto Truck
	Compensation Insurance

The administrative accounts are as follows:

Office Salaries	Office Expense and Supplies
Depreciation, Office Equipment	Telephone and Telegraph
Legal Fees	Compensation Insurance
Postage	

Rule up your own forms for handling the detail pertaining to wages earned and the payroll sheet. The various accounts to which the payroll is distributed are:

Direct Labor (assemblymen and cabinet makers).

Indirect Labor.

Factory Expense.

Delivery Expense.

Sales Salaries.

Office Salaries.

Service Salaries.

Superintendence.

Experimental Research.

Keep in mind the following principles when working the problem:

1. Cash sales are to be entered in both the cash book and the sales book. The sales are to be distributed only in the sales book.

2. All vouchers passed for payment are to be entered in the check register, while payments made by *cash* are to be entered in the petty cash book.

3. Use only the accounts named in the above schedules. It will not be necessary to create new captions.

4. Freight and express on stores are to be added to the material cost
19—

Nov. 2. The capital contributions of the partners are as follows:

L. L. Phelps:

Building.....	\$50,000
Land.....	40,000
Cash.....	10,000

W. S. Bowser

Patent Rights.....	25,000
Small Tools.....	3,000
Cash.....	20,000
Auto Truck.....	2,000

The above assets were turned over to the business and the cash placed on deposit in the Exchange National Bank.

3. Mr. Phelps makes a purchase of the necessary books of account from McClosky & Company, \$35.80, n/30.

A petty cash fund of \$200 was created.

An advertisement for shop employees was placed in the local paper, paying \$1.75 from petty cash.

Received an invoice from the Mica-Ite Corporation for 50,000 square feet of mica-ite @ \$0.05 a square foot, 2/10—n/30. The invoice was dated Nov. 1, and the materials are to be used in making front panels for the radio sets. The material was not yet received.

4. Ordered two wood-working machines from the Atlas Machine Company at a catalogue price of \$1,850 each. Two other machines were also ordered from the same firm having a total catalogue price of \$3,700. These machines are to be shipped f.o.b. Chicago.

The Sign-Painter Company sent a bill for lettering the name of the firm on the auto truck. Amount of the bill \$20, n/30. Paid \$2.45 cash for gasoline for the auto truck.

5. The following employees were hired to begin work on the dates subsequently noted:

6 assemblymen.....	@ \$	0.70 an hour
2 cabinet makers.....	@	1.00 an hour
2 cabinet maker helpers.....	@	0.50 an hour
1 receiving clerk and storekeeper.....	@	0.40 an hour
1 truck driver.....	@	25.00 a week
3 laborers.....	@	0.40 an hour
1 sales clerk.....	@	30.00 a week
2 traveling salesmen.....	@	180.00 a month
1 stenographer and office clerk.....	@	20.00 a week
1 bookkeeper.....	@	20.00 a week

The working day for the shop force, hired by the hour, is to be 8 hours. Employees hired by the week are to be paid on the basis of 6 days constituting a week, and no deduction is to be made for holidays when they do not work. Employees hired by the month are to be paid on the basis of the number of days in the month. The payroll is to be made up on the

sixteenth and the first of each month for the periods ending with the close of business on the preceding days. The employees are to be paid on the seventeenth and second of each month. For payroll purposes consider the following dates to be Sunday in this problem: 1, 8, 15, 22, 29, with Thanksgiving on Nov. 26.

The truck driver, two laborers and the storekeeper began work Nov. 5.

Received the mica-ite (store stock item 1) which checked with the invoice of Nov. 1.

Paid freight on the mica-ite to the P. & L. E. R. R., from the petty cash, \$9.60.

Received an invoice as well as the delivery of 1,008 board feet No. 1 common yellow pine lumber @ \$39 a thousand feet. It came from the Long Shore Lumber Company, 1/15—n/30, and is to be used for shelves and counters in the retail storeroom.

Sent a check to the F. W. Tyson Estate for \$125 for warehouse rent. (Charge manufacturing overhead expense 75 per cent and distribution expense 25 per cent.)

6. Received an invoice dated Nov. 3, from the Union Central Electric Company, 2/10—n/30. The goods were also received and checked in as follows:

8,000 feet No. 14 SSC wire @ \$0.02½ a foot.	} Stores
150 pounds No. 20 SCC wire @ 0.20 pound.	
150 pounds No. 22 SCC wire @ 0.22 pound.	
50 100-foot lengths No. 10 bare stranded wire @ \$0.015 a foot (accessories).	

Received an invoice dated Nov. 2 from the Beacon Battery Company, 2/10—n/30, for the following:

150 No. 6 A dry cells	@ \$0.20 each
50 No. 122—22½-volt B batteries	@ \$0.80 each
50 No. 145—45-volt B batteries	@ \$1.50 each
25 No. 2 C batteries	@ \$0.15 each

The batteries were received and the freight of \$6.74 was paid from the cash to the P. R. R. Co.

Purchased a 30-gallon drum of lubricating oil for the auto truck from the Stadium Garage, \$45, n/30.

7. Paid \$1.50 cash to the City Window Cleaning Company for cleaning windows.

An electric sign costing \$250 was installed by the Electric Sign Company, invoiced at n/30.

Paid \$3 cash for postage.

Paid \$10 cash for advertising goods in the local papers.

9. The Keystone Contracting Company billed the firm for building new shelves and counters in the sales room, and replacing broken windows in the shop. The charge for

labor for the shelves was \$35.90; for glazier's time and materials \$26.20. A check was drawn in payment.

Received 18,525 board feet white ash at \$80 a thousand feet, and 8,000 feet of basswood at \$45 a thousand from the Corona Lumber Company. Invoice dated 1/10—n/30. The lumber which is to be used in making cabinets for the sets was stored in the warehouse.

The stenographer began work this date.

10. Received an express shipment of 3,000 radio tubes, 606-T, from the Best Tube Company, and paid \$14.50 express from cash to the American Express Company. Ten of the tubes tested below standard and were marked for return.

Voucher for the Mica-Ite Corporation was passed for payment and paid.

Two assemblymen, one cabinet maker and one cabinet maker's helper began work this date.

11. The bookkeeper began work today. The books have been kept by Mr. Phelps up to the present time.

Received invoice dated Nov. 5 from the Radio Appliance Company, 1/10—n/30. The following parts are to be used in the manufacture of sets:

1,000 C-76 variable condensers	@ \$1.75 each
2,000 A-221 fixed condensers	@ \$0.03 each
3,000 D-92 dials	@ \$0.10 each
3,000 S-167 sockets	@ \$0.20 each
3,000 R-86 rheostats	@ \$0.25 each

The following items are to be placed in the retail stock:

25 T-5 table talkers	@ \$15.00 each
100 LA-66 lightning arresters	@ \$ 0.20 each

12. Received an invoice for the 3,000 tubes received on the tenth from the Best Tube Company. The invoice was dated Nov. 7, amount \$3,000, terms 1/10—n/30. (Do not consider any adjustment for the bad tubes when making up the invoice.) A request for credit was made to the Best Tube Company.

Voucher payable to the Beacon Battery Company paid today.

Received an invoice from the Office Equipment Company, dated Nov. 9, n/30, covering the following:

1 Typewriter	\$125
1 Adding machine	240
1 Safe	500
2 File cabinets	80
3 Desks	225
1 Cash register	175

Paid cash \$2.50 for gasoline for the auto truck.

13. Paid voucher to the Union Central Electric Company.
 Received the four machines from the Atlas Machine Company, invoice being dated Nov. 5, n/30, \$7,400.
 Paid freight on the machinery to the P. R. R. Co., by check, \$85.
 Received an invoice dated Nov. 9 from the Radio Jobbers Corporation for accessories for the retail department, \$1,865.43, 1/15—n/30, f.o.b. Chicago. The material was also received this date.
 Insurance policies were received today dated Nov. 2, for one year's coverage with premiums as follows:

Auto fire, theft, and public liability.....	\$150
Building and machinery.....	200
Finished goods.....	50

The Central Underwriters Association wrote the policies.

14. The sales clerk began work today.
 Two motors for running the new machines were purchased at a cost of \$615. Invoice for the motors which were received yesterday came from the Eastern Electric Company, n/30.
 Paid freight on motors by cash \$7.56 to the B. & O. R. R.
 Cash sales of accessories, \$41.50.
 Passed voucher for payment to the Radio Appliance Company in order to save the discount, although the goods have not been received and checked with the invoice.
 Time slips turned in by the laborers for the week of Nov. 9 to 14, inclusive, show total charges as follows:

Miscellaneous factory expense.....	48 hours	} For distribution purposes only.
Indirect labor.....	96 hours	

16. Received part of the material from the Radio Appliance Company as shown on their invoice of Nov. 5.
 Payroll made up and entered in the voucher register.
 Labor and materials cost \$241.90 for installing new machines.
 Paid for same by check to George Bayless.
 Received a credit memorandum with instructions to return the ten bad tubes received Nov. 10, from the Best Tube Company, and to prepay the express. The express was paid to the American Express Company by cash \$1.05, which the firm applied as a credit against the amount owed the Best Tube Company.
 Cash sales of accessories amounted to \$465.90.
17. The employees were paid today by cash which was withdrawn from the bank.
 Received the balance of the material from the Radio Appliance Company, as shown on their invoice of Nov. 5. This shipment checked short twelve condensers C-76, priced at \$1.75 each. A refund was requested, since the invoice was

paid on Nov. 14 in order to take advantage of the discount.

Paid the Best Tube Company.

Cash sales of accessories amounted to \$397.85.

18. Two more assembly men, another cabinet maker and another cabinet maker's helper began work today.

Paid Smith and Boyd \$2.60 cash for gasoline for the truck.

Paid Schenley Garage \$13.40 cash for truck repairs.

Received an invoice, terms 1/15—n/30, today from the Missouri Hardware Company for the following materials used in finishing sets:

50 gallons mahogany stain, @ \$5.00 gallon.....	\$250
50 gallons walnut stain, @ \$5.10 gallon.....	255
300 pairs 2½-inch brass hinges @ \$0.05 pair.....	15
100 boxes (100 each) ¾-inch No. 16 flat brass screws @ \$0.20 box.....	20

The material was received this date.

19. Purchased office supplies from Clark & Company paying cash \$8.45.

Paid cash to the Postal Telegraph Company for sending telegrams, \$1.25.

Two traveling salesmen, J. C. Cox and J. K. Miller started out on the road today.

Received an invoice dated Nov. 18, 2/10—n/30, from the Standard Supply Corporation for the following items which were received today:

10 gallons machine oil.....	@ \$0.90 gallon
250 pounds waste.....	@ \$0.035 pound
25 gallons cutting compound.....	@ \$0.45 gallon

One laborer did not report for work today.

20. Paid \$0.90 cash for telegram sent to the Mica-Ite Corporation. Four each of the three styles of sets were completed and placed in the retail storeroom. (No entry is required under a non-cost system.) The sets will wholesale at the following prices: style A, \$20; style B, \$39; style C, \$65. Sets sold for cash or retail at the company's salesroom will be at the following prices: style A, \$35; style B, \$65; style C, \$110. Passed voucher for payment to the Long Shore Lumber Company.
21. Through an oversight, the voucher payable to the Corona Lumber Company was not passed for payment until today. The discount was deducted regardless of the fact that it was beyond the discount period. Cash sales for the past 4 days: style A, \$70; style B, \$65; style C, \$110; accessories, \$213.73.
23. Sold the Rainbow Inn, 2/10—n/30, one style C set @ \$110, and batteries and wire amounting to \$10.20.

Salesman sent in an order to ship to the Chalmers Electric Company six each of the three different style sets. A 30-day trade acceptance dated today was sent with the invoice which was accepted and returned. Express paid on the shipment from cash, \$4.75.

24. Two more assemblymen and another laborer began work today. Shipped 12 style C sets to L. M. Andrews & Company, 2/10—n/30.

Paid cash for time cards, \$23.50.

Paid \$2.50 cash for mineral water for the office.

Passed voucher for payment to the Radio Jobbers' Corporation. The bookkeeper made the check out for \$1,864.78.

25. Received a letter from the Corona Lumber Company stating that they would not accept as full payment the check sent them on the twenty-first. They sent another invoice for the amount of the discount which was taken after the discount period had expired. After a long-distance conversation with the company, Mr. Phelps gave the invoice to the bookkeeper to be entered for payment today.

27. A check for refund is received from the Radio Appliance Company in accordance with our request of Nov. 17.

Paid cash for gasoline, \$2.60; for office supplies, \$1.30.

Sold to Olsen & Polsen the following which were shipped today: four style A; one style B; and two style C sets, terms 2/10—n/30.

28. Passed voucher for payment to the Standard Supply Company.

Cash sales for the week: style A sets, \$105; style B sets, \$130; style C sets, \$440; accessories, \$275.96.

Sold to Masters & Mattix, 2/10—n/30 terms, the following: 15 style A, 20 style B, and 25 style C.

30. Received expense records as follows from the traveling salesmen for Nov. 19 to 29 inclusive; J. C. Cox, \$70.48; J. K. Miller, \$80.65. Mr. Miller requested that this amount be telegraphed to him at once which was done, \$1.25 cash being paid to the Western Union. A check was mailed to Mr. Cox. A service man to install sets and handle complaints from customers began work today at the rate of \$30 a week. He was called out on three jobs and at the end of the day turned in \$9.50 cash which he had collected.

Reimburse the petty cash for the payments made during the month, impressing the payments made in the voucher register and making the distribution to the voucher summary sheets and the general ledger as the occasion requires. Make up a voucher for the payroll for the period Nov. 16 to 30, inclusive.

The time slips turned in by the laborers show charges to delivery expense for 24 hours of the total time which they have worked during the past two weeks.

Received a bill from the City Service Corporation for gas, \$76.20, and power, \$110.92.

Received a bill from the Manufacturers Casualty Company for advance bill of \$50 for compensation insurance.

Received a check from the Rainbow Inn paying their account in full.

The adjustments to be made at Nov. 30, before preparing a trial balance, are as follows:

Charge one-twelfth of the prepaid insurance to the proper expense accounts.

Charge off depreciation as follows:

Buildings.....	21½	per cent per annum on cost.
Machinery.....	10	per cent per annum on cost.
Advertising fixtures.....	15	per cent per annum on cost.
Auto truck.....	33⅓	per cent per annum on cost.
Store fixtures.....	10	per cent per annum on cost.
Office equipment.....	10	per cent per annum on cost.

Amortize patents at the rate of one-seventeenth of cost per annum.

State taxes for the month estimated to be \$26.72.

Compensation insurance for the month estimated as follows:

Manufacturing Department.....	\$10.72
Distribution Department.....	2.85
Administration Department.....	1.05

Sales commissions accrued, \$48.33.

Create a reserve for doubtful accounts equal to one-half of 1 per cent of the net charge sales.

Since no real cost system is in use, the requisitions on the storeroom for raw materials used in production do not necessitate a journal entry. The requisitions are recorded in the stores ledger, however, to maintain a perpetual inventory. The raw materials requisitioned during November are as follows:

- 10,000 square feet mica-ite.
- 5,000 feet No. 14 SSC wire
- 100 pounds No. 20 SCC wire
- 75 pounds No. 22 SCC wire
- 5,000 board feet white ash
- 1,000 board feet basswood
- 150 C-76 condensers
- 300 A-221 condensers
- 300 D-92 dials
- 1,000 S-167 sockets
- 500 R-86 rheostats
- 800 T-606 tubes
- 5 gallons mahogany stain
- 3 gallons walnut stain
- 150 pair 2½-inch brass hinges
- 5 boxes ¾-inch No. 16 brass screws

From the above information compute the raw material inventory value at Nov. 30.

Inventory of work in process estimated to be worth \$361.12.

Finished sets unsold cost to produce \$250.50.

Inventory of accessories amounted to \$1,245.50.

a. Prepare a trial balance, and prove the control accounts.

b. Prepare a work sheet and closing entries using revenue accounts.

c. Prepare the following financial statements:

1. Statement of the cost of production.

2. Statement of income, profit and loss.

3. Statement of profit distribution and ownership.

4. Balance sheet.

Chapter XXIV

1. The following trial balance was taken from the ledger of the Valley Malleable Iron Company, Dec. 31, 19—, before closing:

Plant and Equipment.....	\$ 62,000	
Raw Material Inventory, Jan. 1, 19—.....	17,500	
Purchases of Raw Material.....	50,500	
Work in Process Inventory, Jan. 1, 19—.....	15,000	
Finished Goods Inventory, Jan. 1, 19—.....	12,500	
Cash.....	5,500	
Accounts Receivable.....	60,000	
Capital Stock.....		\$100,000
Notes Payable.....		1,500
Accounts Payable.....		42,000
Direct Labor.....	115,000	
Indirect Labor.....	7,500	
Heat, Light and Power.....	7,500	
Insurance on Plant and Equipment.....	2,500	
Miscellaneous Manufacturing Expenses.....	37,500	
Sales Returns.....	500	
Rentals Received.....		1,000
Advertising.....	3,000	
Selling Expenses.....	17,500	
Interest on Notes Payable.....	250	
Administrative Expenses.....	12,500	
Sales Discount.....	250	
Sales.....		270,000
Purchase Discount.....		500
Surplus.....		12,000
	<u>\$427,000</u>	<u>\$427,000</u>

Additional data to be considered at Dec. 31, 19—, were as follows:

Raw material inventory	\$21,670
Work in process inventory	13,575
Finished goods inventory	12,500
Direct labor accrued	760
Indirect labor accrued	234
Prepaid insurance	1,250

Depreciation on plant and equipment (8 per cent per annum).

Create a reserve for doubtful accounts equal to 1 per cent of the outstanding accounts receivable.

a. Set up ledger accounts and enter therein the amounts as shown in the trial balance.

b. Prepare and post the adjusting and closing entries, using revenue accounts.

2. The following trial balance was prepared from the ledger of the Gibraltar Galvanizing Company for the year ended Dec. 31, 19—:

Cash.....	\$ 4,525	
Petty Cash.....	100	
Accounts Receivable.....	47,900	
Notes Receivable.....	5,000	
Inventory Raw Materials.....	12,500	
Inventory Work in Process.....	5,750	
Inventory Finished Goods.....	22,870	
Bond Discount.....	500	
Land.....	7,770	
Buildings.....	25,000	
Machinery and Small Tools.....	31,900	
Furniture and Fixtures.....	1,625	
Accounts Payable.....		\$ 25,200
Notes Payable.....		2,750
Mortgage Payable.....		10,000
Bonds Payable.....		10,000
Reserve for Depreciation, Buildings.....		5,000
Reserve for Depreciation, Machinery and Tools.....		8,515
Reserve for Depreciation, Furniture and Fixtures.....		500
Reserve for Doubtful Accounts.....		190
Reserve for Water Rent.....		37
Reserve for Working Capital.....		20,000
Surplus.....		9,242
Capital Stock.....		80,000
Sales.....		175,000
Returns and Allowances on Sales.....	4,672	
Raw Material Purchases.....	96,850	
Freight In.....	1,398	
Direct Labor.....	39,565	
Indirect Labor.....	7,180	
Heat, Light and Power.....	3,456	
Factory Expenses and Supplies.....	1,510	
Insurance on Plant and Equipment.....	855	
Advertising.....	2,595	
Insurance on Finished Goods.....	166	
Salesmen's Salaries.....	6,000	
Salesmen's Traveling Expense.....	1,800	
Office Salaries.....	3,250	
Stationery and Office Supplies.....	315	

Postage.....	962	
Office Expense.....	417	
Office Rent.....	600	
Officers' Salaries.....	8,000	
Purchase Discount.....		1,055
Interest Earned.....		96
Sales Discount.....	1,183	
Doubtful Accounts.....	150	
Interest on Notes Payable.....	121	
Interest on Mortgage Payable.....	600	
Interest on Bonds Payable.....	500	
	<u>\$347,585</u>	<u>\$347,585</u>

Other adjusting data to be considered at Dec. 31, 19—, were as follows:

Raw material inventory	\$14,750
Work in process inventory	5,100
Finished goods inventory	27,892
Advertising catalogues unduse	540

Depreciation on buildings to be computed at 4 per cent of cost per annum.

Depreciation on machinery and small tools, 10 per cent of cost per annum.

Depreciation on furniture and fixtures, 10 per cent of cost per annum.

Create a reserve for doubtful accounts equal to 2 per cent of the outstanding accounts receivable.

Interest accrued on notes receivable amounted to \$100.

Interest accrued on notes payable amounted to \$3.78.

Insurance on plant and equipment unexpired amounted to \$278.50.

A dividend of 6 per cent was declared, which was to be paid on Jan. 15 of the following year.

Amortize one-half of the balance of the bond discount.

Prepare:

- a. A work sheet having columns for the revenue accounts: Manufacturing, Distribution, and Administration.
 - b. Adjusting and closing entries.
 - c. Statement of the cost of production; statement of income, profit and loss; statement of surplus; and a balance sheet.
3. Prepare adjusting and closing entries from the following trial balance and adjustments, using revenue accounts.

Freight In.....	\$ 3,000	
Inventory Raw Materials, June 30, 19—.....	22,450	
Inventory Work in Process, June 30, 19—.....	5,650	
Purchase Raw Materials.....	250,500	
Direct Labor.....	62,500	
Miscellaneous Factory Expenses.....	5,500	
Inventory Finished Goods June 30, 19—.....	7,500	
General Administrative Expenses.....	23,700	
Sales.....		\$348,700
Selling Expenses, Miscellaneous.....	25,000	
Freight Out.....	800	
Sales Discount.....	1,600	
Repairs to Equipment.....	600	
Interest.....	500	
Purchase Discount.....		2,300
Cash.....	12,500	
Accounts Receivable.....	90,000	
Notes Receivable.....	3,200	
Accounts Payable.....		50,000
Notes Payable.....		5,000
Real Estate and Buildings.....	30,000	
Machinery and Tools.....	65,500	
Office Equipment.....	2,800	
Capital Stock.....		150,000
Surplus.....		57,300
	<u>\$613,300</u>	<u>\$613,300</u>

The adjustments to be considered at Dec. 31, 19—, were as follows:
Inventories:

Work in process.....	\$ 8,952
Finished goods.....	6,887
Raw materials.....	21,650

Accrued Payroll:

Office salaries.....	175
Direct labor.....	890
Indirect labor.....	110

Prepaid insurance amounting to \$106 was included in factory expenses.

Depreciation:

Office equipment, 10 per cent of cost per annum.

Machinery and tools, $12\frac{1}{2}$ per cent of cost per annum.

Buildings, $3\frac{1}{2}$ per cent of cost (\$20,000) per annum.

Create a reserve for doubtful accounts equal to 1 per cent of the outstanding accounts receivable.

4. The following trial balance was prepared at Dec. 31, 19—, from the ledger of the Hiland Manufacturing Corporation. From the trial balance and the adjusting data, prepare the following:

- a. Work sheet containing columns for the revenue accounts: Manufacturing, Distribution, and Administration.

b. Adjusting journal entries.

c. Closing journal entries through the revenue accounts.

d. The following financial statements:

Statement of the cost of production.

Statement of income, profit and loss.

Statement of surplus.

Balance sheet.

TRIAL BALANCE

Dec. 31, 19—

Cash.....	\$ 7,375.00	
Petty Cash.....	250.00	
Notes Receivable.....	2,625.00	
Accounts Receivable.....	59,687.50	
Inventory, Raw Materials, Jan. 1, 19—..	43,900.00	
Inventory, Work in Process, Jan. 1, 19—	16,350.00	
Inventory, Finished Goods, Jan. 1, 19—	34,410.00	
Prepaid Insurance.....	502.20	
Land.....	7,500.00	
Buildings.....	22,500.00	
Machinery.....	27,500.00	
Small Tools.....	2,750.00	
Patents.....	11,750.00	
Patterns.....	2,125.00	
Office Equipment.....	2,950.00	
Notes Payable.....		\$ 2,500.00
Accounts Payable.....		19,413.70
Mortgage Payable on Plant and Equip- ment.....		20,000.00
Bonds Payable.....		50,000.00
Reserve for Depreciation, Buildings.....		2,500.00
Reserve for Depreciation, Machinery....		3,000.00
Reserve for Depreciation, Patents.....		3,455.90
Reserve for Depreciation, Office Equip- ment.....		950.00
Reserve for Doubtful Accounts.....		1,425.00
Capital Stock.....		125,000.00
Surplus.....		27,877.60
Sales.....		527,125.00
Sales Returns and Allowances.....	25,982.50	
Purchases Raw Materials.....	210,000.00	
Purchase Returns and Allowances, Raw Materials.....		4,691.77
Direct Labor.....	186,962.80	
Indirect Labor.....	27,836.00	
Power and Fuel.....	10,590.00	
Repairs to Buildings.....	770.00	
Repairs to Machinery.....	860.00	
Factory Expenses.....	1,791.75	
Employees Liability Insurance.....	2,213.25	

TRIAL BALANCE.—(Continued)

Dec. 31, 19—.

Office Salaries.....	9,267.50	
Officer's Salaries.....	16,000.00	
Postage.....	1,100.00	
Telephone and Telegraph.....	895.00	
Taxes on Real Estate.....	677.50	
Stationery and Printing.....	1,675.00	
Freight In.....	5,176.28	
Freight Out.....	3,167.72	
Employees Bond Expense.....	155.00	
Salesmen's Traveling Expense.....	9,650.00	
Salesmen's Salaries and Commissions	20,290.00	
Bonus to Officers.....	5,000.00	
Sales Discount.....	4,106.60	
Purchase Discount.....		2,076.18
Donations.....	237.90	
Insurance on Buildings.....	220.00	
Insurance on Equipment and Machinery.	318.85	
Insurance on Finished Goods.....	196.17	
Sales Tax.....	527.13	
Interest on Notes Payable.....	23.50	
Bond Interest.....	1,250.00	
Interest on Mortgage.....	900.00	
	<u>\$790,015.15</u>	<u>\$790,015.15</u>

The following adjustments are to be considered at Dec. 31, 19—:

Inventory raw material at cost \$45,000; at market \$40,000.

Inventory work in process..... \$15,665.00

Inventory finished goods..... 55,000.00

Inventory small tools..... 2,015.00

Inventory patterns..... 1,850.00

Depreciation on buildings..... 2½ per cent of cost

Depreciation on machinery..... 10 per cent of cost

Depreciation on office equipment.... 10 per cent of cost

Amortize one-seventeenth of the patent cost.

Charge one-half of 1 per cent of the net sales to doubtful accounts.

Interest accrued on notes receivable..... 13.13

Direct labor accrued..... 1,836.31

Indirect labor accrued..... 356.50

Interest accrued on notes payable..... 12.50

Interest accrued on mortgage payable..... 300.00

Interest accrued on bonds payable..... 1,250.00

Accounts receivable on the books, amounting to \$1,949.87, are deemed uncollectible and should be written off.

Apportion the following expense items as shown on page 506.

	Manufacturing, per cent	Distribution, per cent	Administration, per cent
Real-estate taxes	80	10	10
Power.....	80	10	10
Repairs, insurance, and depreciation on build- ings.....	80	10	10
Liability insurance	70	20	10
Telephone and telegraph	—	50	50
Stationery and printing	20	30	50

5. Globe Glass set Continued:

Prepare a work sheet, general journal entries and make the postings at April 30, 19—, for the following adjustments:

1. Compensation insurance based upon the operating payroll applicable to:

a. Manufacturing cost.....	\$41.55
b. Distribution expense.....	3.87
c. Administrative expense.....	0.72

2. Estimated taxes for the month applicable to:

a. Manufacturing cost.....	\$31.55
b. Distribution expense.....	20.55

3. Charge one-half month's prepaid insurance to expense.

4. Make provision for relining melting tanks, the estimated deterioration for the last half of April being..... \$166.67

5. Interest accrued on notes payable to the Best Construction Company, \$12.56.

6. Interest accrued on mortgage payable to Atlas Construction Company, \$37.50.

7. Create a reserve for doubtful accounts equal to one-half of 1 per cent of the outstanding accounts receivable at Apr. 30.

8. Charge depreciation at the following per annum rates for a one-half month period:

a. Buildings:	Per cent
1. Main plant.....	7½
2. Machine shop.....	3
3. Storage warehouse.....	3½
4. Raw material sheds.....	5
5. Storeroom.....	5
b. Melting tanks.....	15
c. Lehrs.....	10
d. Machinery:	
1. Presses and motors.....	15
2. Carrying out equipment.....	10
3. Fans and motors.....	25
4. Air compressor and motor.....	5½
e. Molds and dies.....	25

f. Machine-shop equipment:

1. Lathe, grinding machine and planer..... $8\frac{1}{2}$
2. Drill press and boring machine..... 10

g. Conveyor..... $8\frac{1}{2}$ *h.* Railroad siding (50 per cent to manufacturing cost and 50 per cent to distribution expense)..... 4*i.* Auto trucks (equally to manufacturing cost and distribution expense)..... $33\frac{1}{3}$ *j.* Office equipment..... 10

9. Patents to be written off on the basis of one-seventeenth of cost per annum. (One-half of the monthly charge only for April).

10. Inventories:

a. Raw Materials:

1. Sand..... \$ 503.17

2. Soda..... 865.40

3. Lime..... 3,656.00

4. Feldspar..... 500.50

5. Arsenate of Soda..... 185.00

6. Glass Cullet..... 134.51

7. Fruit-jar wires..... 5,550.50

8. Fruit-jar rubbers..... 2,618.00

b. Finished ware..... 508.62*c.* Supplies:

1. Cartons and paste..... 4,250.00

Prepare entries for closing through the revenue accounts.

11. Set up an account for "Deferred Operating Expense," and charge thereto all manufacturing, distribution, and administrative expenses incurred up to April 15, 19—, inclusive, which includes the payroll for the first half of April.

12. Charge off the balance in the Deferred Operating Expense account over a 6 month period.

Chapter XXV

1. The books of the Traynor Trunk Company, manufacturers of trunks, show in part the following account balances on July 1, 19—:

Raw Material Inventory, Jan. 1, 19— (cost) \$ 6,250

Finished Trunks, Jan. 1, 19— (800)..... 24,000

Purchases Raw Materials..... 31,250

Goods in Process, Jan. 1, 19—..... 4,500

Direct Labor..... 41,250

Miscellaneous Manufacturing Expenses..... 11,500

Miscellaneous Selling Expenses..... 45,000

Commissions and Bonuses to Salesmen..... 20,000

Administrative Expense..... 15,000

Bad Debts..... 2,000

Sales Discount @ 1 per cent..... 1,500

Interest on Mortgage..... 500

Depreciation on Plant..... 2,750

The sales for the 6-month period were 3,000 trunks at a gross billing price of \$270,000. The raw material inventory at July 1, 19— (same year) amounted to \$2,000 at cost, with a market value of \$2,500. The cost of the goods in process amounted to \$4,500, and the trunks ready for sale numbered 400 on July 1. Prepare a statement showing:

1. Cost of trunks manufactured.
2. Manufacturing cost of goods sold.
3. Gross manufacturing profit.
4. Net trading profit or loss.
5. Final net profit or loss.

Show all figures necessary to support your answer.

2. The following information is taken from the books and records of the Modern Bookcase Manufacturing Company:

Overhead Expenses.....	\$ 90,000
Inventory Raw Materials, Jan. 1, 19—.....	35,000
Selling Expenses.....	81,000
Inventory Raw Materials, Dec. 31 (same year)	42,000
Purchases Raw Materials.....	95,000
Inventory Work in Process, Dec. 31 (same year)	27,000
Administrative Expense.....	75,000
Inventory, Finished Cases, Jan. 1, 19—, composed of 962 cases manufactured in past year.....	25,012
Total Sales (16,150 cases).....	646,000
Inventory Work in Process, Jan. 1, 19—.....	30,000
Direct Labor.....	210,000
Sales Returns.....	4,400
Finished Bookcases (purchased 40, all of which have been sold).....	1,200
Indirect Labor.....	35,000

Inventory Finished Goods, Dec. 31 (same year) composed of 300 cases manufactured in past year, and 1,702 cases manufactured in present year.

Prepare:

1. Statement of cost to manufacture.
2. Statement of income, profit and loss.
(Show all computations involved in preparation of the statements.)
3. At June 30, 19—, the Universal Radio Manufacturing Company, producers of a single uniform style of receiver, had inventories as follows:

Finished Goods (320 sets).....	\$40,000
Raw Materials.....	20,000
Factory Supplies.....	10,000
Goods in Process.....	16,000

During the fiscal year ended June 30, 19—, its purchases, manufacturing expenses (other than factory supplies consumed), and direct labor were as follows:

Purchases, Raw Materials.....	\$50,000
Purchases, Factory Supplies.....	16,000
Manufacturing Expenses.....	64,000
Direct Labor.....	16,800
At June 30, 19— of the following year, the inventories were as follows:	
Goods in Process.....	\$12,000
Raw Materials.....	24,000
Factory Supplies.....	8,000

The number of sets available for sale during the year amounted to 1,560. The new inventory of finished goods was composed of 100 sets on hand at the beginning of the year, and 395 sets which were produced during the year. The sets were sold during the year at a uniform price of \$200. Selling expenses for the fiscal year amounted to \$55,000; administrative expenses \$35,000; interest on mortgage \$3,000; and purchase discount, at an average of $1\frac{1}{2}$ per cent on all purchases, \$985.40.

Prepare:

1. Statement of cost to manufacture.
2. Statement of income, profit and loss.

Also show clearly all figures used in the computation of the various items in the two statements.

4. From the books of the Frankfort Fan Factory the following summaries were taken at the end of the fiscal period, Dec. 31, 19—:

Raw Material Inventory, Jan. 1, 19—.....	\$ 12,500
Direct Labor.....	82,500
LaFayette Branch House Expenses (rents, salaries, etc.)	40,000
Selling Expenses (traveling expenses, salaries, etc.).....	30,000
Inventory Raw Material, Dec. 31, 19— (same year)	5,000
Bad Debts.....	8,000
Indirect Manufacturing Expenses.....	23,000
Inventory Finished Goods, Jan. 1, 19—.....	37,500
Sales.....	550,000
Interest on Mortgage.....	500
Purchases Raw Material.....	162,500
Agent's Commissions.....	90,000
Depreciation on Machinery and Plant.....	5,500
Purchase Discount taken @ 2 per cent.....	2,500
Inventory Goods in Process Jan. 1, 19—.....	5,600
General Administrative Expenses.....	10,000
Interest on Notes Receivable.....	100

The inventory of finished goods on Jan. 1, consisted of 1,500 fans @ \$25.

Sales consisted of 11,000 fans at \$50 each.

The number of fans in stock ready for sale on Dec. 31, 19—, amounted to 1,900.

The number of fans in process on Dec. 31, 19—, was 300, with a value of \$6,450.

Submit a profit and loss statement to show:

1. Manufactured cost of goods produced.
2. Manufactured cost of goods sold.
3. Gross manufacturing profit.
4. Trading profit.
5. Final net profit.

5. The books of the Springfield Spring Company showed the following facts on Dec. 31, 19—, the end of the fiscal year:

Sales (80,000 units @ \$20 per unit).....	\$1,600,000
Inventory Finished Goods Jan. 1, 19— (5,000 units @ \$12).....	60,000
Raw Materials Used	554,380
Direct Labor.....	499,030
General Overhead.....	245,620
Inventory Goods in Process Jan. 1, 19—.....	48,000
Inventory Goods in Process Dec. 31, 19—.....	62,000
Freight Out.....	800
Selling Expenses, Miscellaneous.....	42,000
Administration Expenses, General.....	65,000
Finished Goods Purchased (in the open market, 1,000 units @ \$16).....	16,000

Inventory Finished Goods Dec. 31, 19— (6,000 units @ ?)

(Assume all purchased units sold)

Prepare a statement showing:

1. Manufacturing cost of goods produced.
2. Cost of goods sold.
3. Manufacturing profit.
4. Final net profit.

Also present:

1. Figures to show the unit cost of production (carrying the decimal to four places).

2. Figures to show how the value of the new inventory of finished goods is determined.

6. The American Electric Manufacturing Company manufactures and sells electric waffle irons. A survey of their books and records revealed the following information on Dec. 31, 19—:

Purchases Raw Material.....	\$ 95,600.00
Purchase Discount @ 3 per cent.....	1,720.00
Freight and Cartage In.....	1,620.00
Gross Sales (\$14.04 a unit).....	239,859.36
Returned Sales.....	3,861.00
Direct Labor.....	54,620.00
Selling Expense.....	25,114.30
Administration Expense.....	11,458.60
Loss on Sale—Truck.....	1,853.00
Interest on Liberty Bonds.....	180.00
Raw Material Inventory Dec. 31, 19—.....	7,100.00
Finished Goods Inventory Jan. 1, 19— (4,447 units)	46,693.50

Heat and Power.....	6,280.20
Superintendence.....	5,940.30
Interest on Factory Mortgage.....	1,800.00
Packing Expenses (Manufacturing).....	4,789.40
Taxes, Machinery and Building.....	2,500.00
Repairs, Machinery and Building.....	800.00
Factory Office Expense.....	3,580.10
Depreciation Machinery and Building.....	10,360.00
Finished Goods Inventory Dec. 31, 19—.....	?
Goods in Process Inventory, Dec. 31, 19—.....	12,900.00
Raw Material Inventory, Jan. 1, 19—.....	6,800.00

Of the 21,564 units available for sale, assume that all units of the old inventory of finished goods were disposed of during the year.

Required:

1. Statement of cost of goods manufactured.

2. Statement of income profit and loss.

7. The Royal Electric Company manufactured a small hand-vacuum cleaner which they retailed at \$11.50 net. A review of the trial balance at Dec. 31, 19—, revealed the following account balances:

Raw Material Purchases.....	\$161,920.00
Direct Labor Payroll.....	90,657.00
Commissions and Salaries Paid.....	78,479.00
Power and Light.....	6,947.00
Rent.....	3,600.00
Indirect Labor Payroll.....	12,094.00
Manufacturing Expense and Supplies.....	28,478.00
Traveling Expenses.....	21,966.00
Freight Out.....	3,907.00
Officers' Salaries.....	25,000.00
Sales.....	512,865.50
Interest on Notes Receivable.....	200.00
Office Expense.....	24,778.50
Sales Discount (1 per cent).....	2,530.00
Purchase Discount (average 2 per cent).....	1,472.00

Other information disclosed at the same date was as follows:

Direct labor payroll accrued.....	\$1,543
Interest on mortgage given to secure payment on new machines purchased.....	450
Depreciation on machinery and plant equipment.....	5,100

Inventory records disclosed the following:

	Cost	Market
Raw material, Jan. 1, 19—.....	\$12,000	
Raw material, Dec. 31, 19—.....	13,971	\$11,650
1,020 Unfinished units, Jan. 1, 19—.....	3,794	
1,239 Unfinished units, Dec. 31, 19—.....	4,176	
3,160 Completed units, Jan. 1, 19—.....	22,436	
2,561 Completed units, Dec. 31, 19—.....	?	

Prepare:

1. Statement of cost of production.
2. Statement of income, profit and loss.
3. Computation of:

a. Unit cost of production for the year.

b. Finished goods inventory, Dec. 31, 19—.

8. The following balances were taken from the ledger accounts of the Standard Shovel Company for the year ended Oct. 31, 19—:

Inventory Finished Goods.....	\$ 10,862.50
Purchases Raw Materials.....	362,286.00
Indirect Supplies.....	12,466.00
Depreciation on Plant and Equipment.....	103,158.00
Maintenance, Boiler Room.....	29,872.00
Repairs to Plant and Equipment.....	5,590.00
Insurance on Plant and Equipment.....	2,709.00
Taxes on Plant and Equipment.....	2,600.00
Inventory, Work in Process.....	18,613.00
Freight In.....	8,947.00
Indirect Labor.....	52,562.00
Miscellaneous Selling Expense.....	116,072.00
Direct Labor.....	346,592.40
Interest on Mortgage Payable.....	3,600.00
Purchase Discount.....	5,434.29
Administrative Expenses.....	63,592.10
Inventory, Raw Materials.....	37,645.00
Net Sales (@ \$10 a dozen).....	1,178,650.00
The inventory values at Oct. 31, 19—, were as follows:	
Raw Materials.....	42,966.00
Work in Process.....	22,482.00

Other information available at the closing date was as follows:

1. The cost of producing shovels for the year ended Oct. 31, 1928, averaged \$7.80 a dozen.

2. The inventory of finished goods at the beginning of the period was composed of 1,375 dozen, all of which were sold during the fiscal year.

Submit:

1. Statement of the cost of production.

2. All computations pertaining to the inventory of finished goods at Oct. 31, 19—.

3. Statement of income, profit and loss.

9. Using the information in Problem 5, Chap. X, compute the estimated inventory value at Jan. 31, 1930, if the net sales for that month amounted to \$24,660.

10. Prepare the following financial statements for the Globe Glass problem, the work sheet for which was prepared in Problem 5, Chap. XXIV:

- a. Statement of the cost of production.
- b. Statement of income, profit and loss.
- c. Statement of surplus.
- d. Balance sheet.

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